

Does aid for HIV respond to media pressure?

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Abstract. Media attention towards HIV-related issues has increased dramatically over the past two decades. In this paper, we test whether this growing attention is affecting donors' disbursement of aid for HIV to African countries. We use information available on the number of articles and press documents on HIV issues and other health concerns published in donor countries to construct proxies of domestic and international media coverage. These proxies are then included as explanatory variables in a regression of aid for HIV to Africa. After controlling for a number of donor characteristics, we find that greater media coverage increases aid disbursement. This may be positive for the anti-HIV campaign, but may result in displacement effects to the extent that other diseases that cause greater mortality and morbidity receive less media coverage than HIV/AIDS.

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1. Introduction

Media attention towards HIV-related issues has dramatically increased over the past two decades. This trend reflects (i) the recognition that HIV is one of the biggest global pandemics of modern times and (ii) the advancement in communication and information technologies that allows the media to record events in more remote areas faster and at a lower cost than ever before. An increased level of media coverage of HIV could have impacts ranging from the strengthening of people's awareness of the disease¹ to the shaping of anti-HIV policy strategies. In this paper we aim to quantify the specific impact of media coverage on the amount of health aid distributed by donors for the purpose of HIV interventions.

In a broad sense, our work is nested within the literature that studies the determinants of aid flows. Most of this research is however concerned with estimating the responsiveness of aid to a recipient countries' economic and physical needs, civil and political rights, and government effectiveness (see, for instance, Alesina and Weder, 2002; Bandyopadhyay and Wall, 2007; Fleck and Kilby, 2010). Considerably less attention is devoted to understanding the relationship between the level of aid disbursed and the donor countries' economic, political, and institutional characteristics (some exceptions exist though like Alesina and Dollar, 2000; Chong and Gradstein, 2008; Tingley, 2010). It is this "donor perspective" that we take in our analysis. In contrast to the few existing papers, we do not just look at aggregate aid provided by a donor country. Our focus is instead on a more specific research question: does the media coverage of HIV/AIDS in Africa in a donor country affect the volume of aid disbursed for this cause by that donor country?

¹ A study by Weller et al. (1984) of the infection rate of gonorrhea, a sexually transmitted disease, in London in the mid 1980s found that the rise in media coverage of AIDS had effects on the sexual behavior of homosexual men and subsequently their infection rate of the disease.

The motivation for this specific focus is twofold. Firstly, the human and economic costs of the HIV pandemic (see inter alia Cuddington, 1993; Cuddington and Hancock, 1994; Piot et al. 2001; Dixon et al. 2002) make it important to understand the factors that determine the willingness of developed countries to take action against it. Given that HIV is more prevalent in countries that have the least capability to mobilize resources domestically, disbursing aid for HIV is a crucial way in which developed countries can effectively address the challenges posed by the pandemic. This is particularly true with respect to Africa, where the disruption of social and human capital associated with the high prevalence of HIV severely worsens development prospects in spite of the significant improvement in macroeconomic performance observed in some countries, such as for instance Botswana and South Africa. The analysis of the decision to give health aid to Africa therefore fits within the broader debate on the design of a strategy through which the international community can support African development.

Secondly, little is known on what determines the allocation of aid across different sectors. Economists have looked at whether fungible aid is less effective than targeted aid (Pack and Pack, 1993; Swaroop et al. 2000; Pettersson, 2007; van De Walle and Mu, 2007) and at the effects of specific categories of aid on correspondingly specific development outcomes (Masud and Yontcheva, 2005; Mishra and Newhouse, 2007), taking the allocation decisions as given. Clearly, understanding what drives the allocation decision is crucial in a context where tight budget constraints might imply that aid targeted to a specific sector can be increased only if aid targeted to another sector is reduced. This issue is particularly important in the case of health aid. In addition to HIV, developing countries are afflicted by other health concerns (such as diarrhoea, malaria and tuberculosis) which require a considerable

mobilization of resources and which therefore compete with HIV to attract donors' funds. Given that these other health concerns receive less attention in the media than HIV, quantitative evidence on the response of HIV aid to media coverage will give an indication of the likelihood of displacement effects across health concerns. In other words, the finding that media coverage boosts HIV aid would be good news for the anti-HIV campaign, but at the same time it could indicate a displacement of other health concerns.

Our main finding is that the volume of HIV/AIDS disbursed by donor countries to Africa is larger the more the media in donor countries cover HIV/AIDS issues in Africa. Care is taken to establish the direction of causality of the relationship between media coverage and aid disbursement. Our finding is robust to the addition of a rich set of donor characteristics that may also affect donors' HIV aid disbursement in Africa, including economic size, economic and historical ties with Africa, the ideological orientation of governments, business cycles, and political stability. We also find that HIV aid disbursement responds to both a cumulative and a contemporaneous media effect. However, the cumulative effect appears to be stronger both statistically and economically. Finally, we report that HIV aid disbursement of a given donor also responds to pressure coming from media in other donor countries. In other words, international media pressure matters in addition to domestic media pressure. We suggest that this happens because governments in each donor country care about international reputation.

The rest of the paper is organised as follows. Section 2 reviews some theoretical arguments concerning the role of the media in affecting government's agenda and decisions to pay aid. Section 3 discusses the data and the econometric specification. Section 4 presents the results. Section 5 presents some extensions and sensitivity analysis and this is followed by a

conclusion. A detailed definition of variables, data sources, and list of countries in the sample are provided in the Appendix.

2. Theoretical considerations

Our theory of the media effect on HIV aid disbursement draws on two main strands of the literature: the agenda-setting paradigm and the so-called CNN effect. We review these two strands before formalizing the relationships to be investigated in the empirical section.

2.1 The agenda-setting paradigm

Our empirical story is based on a simple theoretical prior: when mass media emphasize a problem (i.e. HIV aid in Africa), then policymakers react and undertake some actions to address this problem (i.e. disbursement of HIV aid to African countries). This prior can be justified within the broader context of the agenda-setting paradigm. In its simplest form, the paradigm hinges on two relations: the link between the public's priorities and the policymakers' agenda and the effect of the media on public priorities. Pervasive and extensive media coverage of a topic may lead the public to consider this topic to be important; that is, the media influence the public's agenda. Then, political actors, who are intrinsically interested in maintaining the support of the public opinion (especially in a democracy), shape their agenda so to match, at least to some extent, the public's agenda.² In this respect, media would not affect the political agenda directly (even though one could also argue that just like any ordinary citizen, a political actor might regard a topic as important just because it is on the news), but indirectly, via the response of policymakers to the public

² The agenda-setting paradigm originates with Cohen (1963) and McCombs and Shaw's (1972). Subsequent extensions can be found in Dearing and Rogers (1996).

opinion. In fact, for the paradigm to hold, it is not even necessary that the media effectively determine the public's priorities. Media coverage could be irrelevant or it might just be a consequence rather than a cause of public opinion. But as long as political actors believe that media have an impact on the public, then they may react to the media coverage of a specific topic (Walgrave and Van Aelst, 2006).

Various papers provide econometric or anecdotal evidence of media's agenda-setting power. For example, Edwards and Wood (1999) find a significant media impact on the policy agenda of the US president. Soroka (2002) reports similar findings for Canadian policymakers. Besley and Shanahan (2005) provide an interesting application of the paradigm: they show that attention to television news, science television, and entertainment television are all significantly related to the public's support for biotechnology. Bakir (2006) examines the battle between Greenpeace and Shell over the disposal of the Brent Spar oil structure and concludes that media exposure impacts policy both by shaping public perception of risk and by shaping policymakers' perception of public opinion. Dunaway et al. (2010) document the importance of media coverage in explanations of the public opinion of immigration. Similarly, Lofgren and Nordblom (2010) show that intensive media coverage during 2006 affected people's attitudes towards the CO₂ tax on gasoline in the US.

On the other hand, there is no shortage of sceptics about the effective influence that the media have on the political agenda. Early work by Walker (1977), Iyengar (1979), and Kingdon (1984) indicate that the legislative process and viewer perceptions of issue salience are likely to drive media coverage and not vice-versa. Cook et al. (1983) challenge the paradigm from a different perspective. While they do find evidence that the media influence views about issue of importance among the general public and policymakers, they also suggest that it is not this

change in public opinion that leads to subsequent policy changes. In surveying two decades of research on agenda-setting, Bartels (1996) concludes that if media scholars are generally much taken with the agenda-setting power of the media, scholars of traditional political institutions are “less impressed”. More recently, Liu et al. (2010) reject the agenda-setting paradigm in local policy processes. Walgrave et al. (2008) re-examine the agenda-setting paradigm and argue that whether or not the media determine the political agenda depends on (i) the type of media (press vs. television), (ii) the type of political agenda (government vs. parliament), and (iii) the type of issue (sensational, prominent, or governmental). Therefore, different studies that look at different media, political actors, and/or issues would reach heterogeneous results and this in turn explains the conflicting views that have emerged in the literature regarding the media’s agenda-setting power.

Much of the existing theory and empirical evidence on the influence of media comes from the media and political science literature. Still, there are a few contributions that look at the issue from an economic perspective. Besley and Burgess (2001) present a model where a government’s action in response to a shock depends on the media coverage of this shock. If the media do not cover the shock, then any action taken by the government will go largely unnoticed by the electorate. This low electorate payoff implies that the government only responds to large shocks. In contrast when the media actively covers shocks, the government response is taken into account by their citizens in the assessment of an incumbent’s competence. The government therefore has a clear electoral incentive to respond also to smaller shocks. The prediction that media affect government responsiveness is tested using data on the extent to which Indian state governments responded to food shortages during the period 1958-1992. The authors report that governments were effectively more responsive in the states with higher levels of newspaper circulation.

Stromberg (2004) proposes a theory where media matters because they provide information people use in voting and more informed voters generally receive more favourable policies. Petrova (2008) builds on the link between media and public opinion to build a theory of media capture in which the rich influence information published in media outlets in order to prevent the government from undertaking redistributive policies.

2.2. The CNN effect

An interesting extension of the above mentioned arguments on government responsiveness is the so-called CNN effect; that is, the power of the media to provoke major responses to humanitarian crises or, more generally, to influence the foreign policy of western countries. Originally, this effect was conceptualized to explain western countries involvement in humanitarian crises through a simple mechanism: the media make the public opinion aware of atrocities and disasters occurring elsewhere and the public presses their government to take action. However, Robinson (2000 and 2002) proposes a more articulate model of policy-media interaction in which the CNN effect emerges only if two conditions are met. The first condition is that policy must be uncertain. This means that no policy is in place or no policy is agreed upon in response to a newly emerged crisis/issue. The second condition is that media coverage must be framed to be critical of government inaction and empathetic towards the victims. If instead policy is certain (i.e. the sub-system in governments agree and coordinate on a policy course) and media coverage is supportive of the government and creates an emotional distance between the audience and the victims, then media will have no effect on humanitarian interventions. In this case, the media eventually follow, rather than leading, the decision of the government to intervene.

Earlier evidence of a CNN effect comes from case studies of the interventions in Iraq in 1991, Somalia in 1992, and Rwanda in 1994.³ Auerback and Boch-Elkon (2005) also provide evidence of a CNN effect in determining US policy in Bosnia in 1992-1995. In a detailed analysis of US aid contributions, Ruttan (1996) concludes that “domestic sources (of policy) have been more important in determining the size and direction of assistance than the international economic and political environment” (Ruttan, 1996, p. 17). Consistent with this argument, Van Belle et al. (1999), Van Belle and Hook (2000), Van Belle (2003) show that news media have a significant and robust influence on foreign aid allocations

The consensus however is far from unanimous. Livingston and Eachus (1995) examine US decisions to intervene in Somalia in relation to the nature and extent of media coverage and conclude that there is no support for the claim that news attention led to the Bush administration’s decision to intervene. According to Jakobsen (2000), the impact of media coverage on Western conflict management is only occasionally relevant in the violence phase of a crisis and negligible in the pre- and post-violence phase. Because the violence phase is when interventions are most expensive, most dangerous, and least likely to succeed, he concludes that the media coverage of humanitarian crises distorts the allocation of funds and efforts from long-term prevention and reconstruction to short-term relief. In a survey of previous studies on the topic, Gilboa (2005) argues that sufficient evidence to validate the CNN effect is not yet available and that the strength of the effect has been exaggerated in earlier literature. In a recent contribution, Balabanova (2010) extends the analysis of the CNN effect to post-communist countries and finds that there is little evidence of any substantial impact of the media on government position on the Kosovo conflict.

³ For a strong argument on the relevance and importance of the CNN effect, see also Shaw (1996).

2.3. A formal model

We model the impact of media using the same basic intuition underlying the agenda-setting paradigm and the CNN effect hypothesis. That is, we consider a generic donor country i where the representative voter has preferences described by⁴ :

$$(1) \quad V = \left[\pi c^{-\rho} + \alpha \sum_{j,k} \varphi_{jk} g_{jk}^{-\rho} \right]^{-\frac{1}{\rho}}$$

In equation (1), c is the voter's consumption of a public good, g_{jk} is the aid allocated to recipient country j for the purpose of addressing issue k , π and φ_{jk} are non-negative weights, and $1/(1+\rho)$ is the (constant) elasticity of substitution.⁵ Intuitively, if $\alpha > 0$, then equation (1) implies a form of altruism. In order to focus on our objective, we assume the voter only cares about aid for health, so that k indicates a health concern (e.g. HIV).

We assume that public goods and aid are financed by the government out of one unit of disposable output. Therefore the economy-wide resource constraint is:

$$(2) \quad c + \sum_{j,k} g_{jk} = 1$$

⁴ We should index all of our variables by the subscript i . However, we simplify notation and drop i .

⁵ The CES specification is used for its analytical tractability.

The weights φ_{jk} in equation (1) reflect a voter's assessment of the gravity of health concerns in the country. Media coverage is crucial in this assessment: when the media in the donor country report more frequently and extensively on a certain disease k afflicting a given recipient country j then the voter in the donor country believes that disease k in country j is a major health issue. Therefore he would like more aid to be allocated for disease k in country j . This implies that the weights in equation (1) can be expressed as a function of the media coverage m_{jk} :

$$(3) \quad \varphi_{jk} = \varphi(m_{jk}) \quad \text{where } \varphi' > 0$$

The voter maximises (1), given (3), and subject to (2). This yields:

$$(4) \quad g_{jk}^V = \left\{ 1 + \left[\frac{\pi}{\alpha \varphi(m_{jk})} \right]^{\frac{1}{1+\rho}} + \sum_{rs \neq jk} \left[\frac{\varphi(m_{rs})}{\varphi(m_{jk})} \right]^{\frac{1}{1+\rho}} \right\}^{-1}$$

$$(5) \quad \frac{c^V}{g_{jk}^V} = \left[\frac{\pi}{\alpha \varphi(m_{jk})} \right]^{\frac{1}{1+\rho}}$$

Equation (4) implies that from the voter's perspective the optimal allocation of aid to country j for disease k is increasing in the media coverage of disease k in country j . For any given degree of media coverage, g_{jk}^V is strictly increasing in α . This is obvious since a more altruistic voter would like more funds to be allocated to health aid for countries that are in a health crisis.

The actual allocation of funding is decided by an office-motivated government whose loss function is written as:

$$(6) \quad l = \frac{1-\mu}{2}(c - \tilde{c})^2 + \frac{\mu}{2} \sum_{j,k} (g_{jk} - \tilde{g}_{jk})^2$$

where $\tilde{c} + \sum_{j,k} \tilde{g}_{jk} > 1$

where $\tilde{c}$ and $\tilde{g}_{jk}$ are the *bliss* points of the government and μ is a non-negative weight. The government thus minimizes (6) subject to the economy wide resource constraint (2). The inequality $\tilde{c} + \sum_{j,k} \tilde{g}_{jk} > 1$ is necessary to exclude the trivial solution $c^* = \tilde{c}$ and $g_{jk}^* = \tilde{g}_{jk}$. Furthermore, we assume that in addition to voter preferences, the donor government chooses aid disbursement taking into account (i) economic and geopolitical factors and (ii) international reputation. Therefore, we define the government's bliss point for aid disbursement as a weighted average of the desired allocation of the voter and the allocation resulting from considerations of international image and economic and geopolitical opportunity:

$$(7) \quad \tilde{g}_{jk} = (1 - \theta)g_{jk}^V + \theta\tilde{g}(\mathbf{x}, m_{jk}^{world})$$

where θ is a non-negative weight, $\mathbf{x}$ is a vector of donor specific economic and geopolitical factors (i.e. economic size of the donor, economic and/or historical links between donor and recipients) and m_{jk}^{world} is international media coverage of disease k in country j . We assume that $\partial\tilde{g}/\partial m_{jk}^{world} > 0$. This is because the greater the international media coverage of disease k in country j , the more the international community will regard disease k in country j as a major humanitarian emergency, and therefore the greater the reputational gain that the domestic government can expect to obtain from disbursing aid for disease k in country j .

Substituting (7) into (6) and solving the minimization problem we obtain:

$$(8) \quad g_{jk}^* = \tilde{g}_{jk} \left(1 - \frac{\pi}{JK\pi + \mu} \right) + \frac{\pi}{JK\pi + \mu} \left(1 - \sum_{rs \neq jk} \tilde{g}_{rs} \right) - \frac{(1 - \mu)(\tilde{c} + \sum_{rs} \tilde{g}_{rs} - 1)}{JK(1 - \mu) + \mu}$$

$$(9) \quad c^* = 1 - \sum_{jk} g_{jk}^* \frac{\mu + (1 - \mu)JK\tilde{c} - \mu \sum_{rs} \tilde{g}_{rs}}{JK(1 - \mu) + \mu} < \tilde{c}$$

where J is the total number of diseases and K the total number of recipients, so that the product JK is the total number of health items that compete for the allocation of aid funds.

Focusing on equation (8), it is clear that an increase in the media coverage of disease k in country j increases the amount of aid g_{jk}^* by increasing the desired level of the voter g_{jk}^V and hence the bliss point $\tilde{g}_{jk}$ of the government. Similarly, an increase of international media coverage of disease k in country j increases the amount of aid g_{jk}^* by increasing the bliss point $\tilde{g}_{jk}$ via the international reputation effect. Also note that even if the voter is non-altruistic, i.e. if α in equation (1) is zero, g_{jk}^* is still positive as long as the term $\theta \tilde{g}(\mathbf{x}, m_{jk}^{world})$ in equation (7) is positive. This means that economic and geopolitical factors as well as reputational considerations might lead the domestic government to allocate some funds to aid for health even when the representative voter is purely selfish and would like all available resources to be used to finance the provision of domestic public goods.

3. Data on HIV aid to Africa and media coverage

The remainder of the paper is concerned with testing the key prediction of equation (8), namely that media coverage of disease k in country j increases aid disbursement to country j

for disease k . In the empirical analysis we consider a panel of 21 different donor countries, but restrict our attention to one specific disease, HIV, and treat the whole of Africa as a single country. HIV is chosen as it is the disease that attracts most extensive public and media attention insofar as it has caused some individuals to question whether this is to the disadvantage of other health concerns funding (Crosette, 2005, Shiffman 2006, Shiffman, 2008 and Raviglione and Pio, 2002). This said, there is no quantitative evidence to suggest that the level of media coverage actually increases HIV disbursements. The decision to examine Africa is linked to it being the geographic area with the highest burden of HIV/AIDs. We focus on the aid received by the whole Africa instead of that by individual African countries because much media coverage on HIV refers to the whole continent rather than specific countries. Therefore, for each donor, the media variable is defined as the media coverage of HIV issues in all African countries. The dependent variable is the amount of aid for HIV that each donor disburses to all African countries.

3.1. HIV aid to Africa

The most common sources of health aid data are the two OECD databases - the Creditor Reporter System (CRS) database and Development Assistance Committee (DAC) - which have been utilized in many applications (see for instance Mishra and Newhouse, 2009 and Shiffman, 2006 and 2008). DAC is based on annual reports sent by each OECD government and CRS is based on project specific reports forwarded to the OECD. There are major gaps in these data sources. For example, OECD (2001) estimates that the datasets are only 75% to 80% complete for the 1990s. Comparisons between CRS and DAC also reveal major discrepancies (Michaud and Murray, 1994). Most importantly, given that these data measure aid commitments, they are undoubtedly overstating the actual aid efforts of the donor

countries. To fill these gaps the Institute for Health Metrics and Evaluation (IHME) has constructed a dataset spanning the period 1990-2007 that details bilateral and multilateral donations given to countries for five health concerns, including HIV. It is this data that we use for our empirical analysis.⁶

From the IHME dataset we selected 21 donors⁷ (see list in the Appendix) and for each of these donors we aggregate its HIV aid to all African countries for the entire period 1990-2007. In this way we obtain a total of 378 annual observations (18 observations for 21 donors). Flows are measured in units of constant dollars (base year = 2007). The actual amount of aid disbursed, measured in dollars, corresponds to the concept of absolute commitment (see McKinlay and Little 1978a,b), which indicates the ‘gross importance’ attached by a donor to a particular recipient. The sample average of HIV aid amounts to US\$ 16,003,015. In fact, 123 observations out of 378 are zeros, indicating that no HIV aid was disbursed to African countries. Once the zero observations are excluded, the average value of HIV aid increases to US\$ 24,467,930.

3.2. Media coverage

To construct a measure of the intensity of the donors’ media coverage of HIV issues in Africa we use information available from the Factiva library database. For each of the 21 donor countries, we run a search for each individual year for the period 1990-2007 using the keywords HIV, AIDS, Africa, and African. The keywords were entered in 24 major languages including English to ensure that all relevant sources of information were included,

⁶ See HIME (2009) for a more detailed discussion of the dataset and how it overcomes some of the gaps in CRS and DAC.

⁷ The only donor country in the IHME dataset that is not included in our sample is Portugal because it only provided no aid for HIV/AIDS for most of the years.

especially for multilingual countries. The search returns the total number of articles and press documents published in each donor country in each year which refer to HIV or AIDS and Africa or African. This number reflects an absolute count of media coverage and we denote it by $M_{i,t}$, where i is a generic donor country and t is a generic year.

A limitation of $M_{i,t}$ is that its variation across countries maybe driven by differences in the size of the media sector. As an example, consider that in 2007, $M_{i,t}$ is equal to 17,002 in the United States and 772 in the Netherlands. However, the number of journals, newspapers, and other press publications is much larger in the US than in the Netherlands, thus implying that a larger $M_{i,t}$ does not necessarily reflect a greater intensity of media coverage of African HIV issues in the US than in the Netherlands. Therefore we scale $M_{i,t}$ by the number of articles published in donor country i in year t on general HIV issues (therefore, not specific HIV issues in Africa) and other health concerns (denoted by $H_{i,t}$). This number is obtained by removing the words Africa and African from our list of keywords and adding the keywords malaria and tuberculosis (as representative of two other major global health concerns).⁸ For the year 2007, this search returns a total of 105,273 in the US and of 4,473 in the Netherlands. The intensity of the media coverage (that we denote by $m_{i,t}$) is equal to $17,002/105,273 = 16.15\%$ in the US and to $772/4473 = 17.25\%$ in the Netherlands.

Having defined $M_{i,t}$ and $H_{i,t}$, we construct a measure of cumulative media coverage at time t as $\bar{m}_{i,t} = \frac{\sum_{s=1990}^t M_{i,s}}{\sum_{s=1990}^t H_{i,s}}$. Our theory in Section 3 is essentially static in the sense that it does not specify whether media coverage is measured in a particular year or over a number of years. However, the existing evidence on agenda setting and the CNN effect suggests that any

⁸ We separately search for HIV, malaria, and tuberculosis articles and then add up the results of each individual search.

impact of media arises from a continued and repeated coverage of issues. In other words, we argue that governments are more likely to respond to media pressure if it builds-up over a period of time. Therefore, $\bar{m}_{i,t}$ is our preferred measure. Nevertheless, in the empirical analysis, we test for the robustness of the results with respect to the use of $m_{i,t}$ and $\bar{m}_{i,t}$. It is worthwhile to point out that $m_{i,t}$ and $\bar{m}_{i,t}$ represent the use of the bounds of a spectrum of non-negative, finite discount rates: $m_{i,t}$ implies an infinitely large discount rate on past media coverage while $\bar{m}_{i,t}$ implies a zero discount rate. As we will see later, the empirical results from these two completely different discount rates are qualitatively the same.

Another theoretical aspect that we have stressed is that the government of country i might somehow respond to the pressure arising from international media. We therefore define two measures of the intensity of international media coverage of African HIV issues as follows:

$$m_{i,t}^* = \frac{\sum_{j \neq i} M_{j,t}}{\sum_{j \neq i} H_{j,t}} \text{ and } \bar{m}_{i,t}^* = \frac{\sum_{j \neq i} \sum_{S=1990}^t M_{j,t}}{\sum_{j \neq i} \sum_{S=1990}^t H_{j,t}}.$$

In words, international media coverage at time t for donor i ($m_{i,t}^*$) is the sum of African HIV issues media coverage in all other donor countries scaled by HIV and other health concern media coverage in all other donor countries. Cumulative international media coverage is then the sum of annual international media coverage of African HIV issues scaled by the annual international media coverage of all HIV and other health concerns issues.

There are two limitations of our media variables. First, they are obtained from data that capture only *press* coverage. Ideally, we would also like to capture other media, but are unaware of a database that would allow us to do that consistently across a large number of donor countries. We therefore assume that the intensity of press coverage (as measured by $m_{i,t}$ and $\bar{m}_{i,t}$) is a sufficiently fair representation of the intensity of other media coverage.

This assumption is valid once some type of media do not cover African HIV issues systematically more than other types.

The second limitation has to do with the fact that in constructing our media variable we simply count articles, assigning equal weight to all publications. Intuitively, a full page article on, say, the *Washington Post* might generate more pressure than a press release of a few lines published in some local journal. Suppose then that in a country the news concerning HIV in Africa are systematically published in major newspapers while in another country they only appear in minor, local newspapers. The count of publications for the two countries might be the same (or very similar), but the effective pressure exerted on the government would be much higher in the first country. Under these circumstances, one would ideally want to weight publications by readership and length, but this is virtually impossible. Moreover, some specialized magazines might have a relatively small readership and still be able to exert a lot of pressure because of their reputation, thus implying that a weighting system based on readership only could also misrepresent the effective degree of media pressure. Finally, we think that the distribution of Africa-HIV publications by type of media (i.e. national newspaper, local press, specialized magazine, etc.) is unlikely to differ much across countries and/or to change considerably over time. This means that if our inability to weight publications by readership and length might result in some degree of over or underestimation of the effective media pressure, then the extent of this over or underestimation is more or less the same across countries and over time. We find this consideration comforting.

The average $\bar{m}_{i,t}$ in the sample is 10.5%, with a standard deviation of 7%. A simple regression of the HIV aid to Africa (expressed in billion US dollars) on $\bar{m}_{i,t}$ yields an estimated coefficient on the cumulative media variable of 0.243 and the associated p-value is

0.019. If we log transform the dependent variable (having preliminarily dropped all of the zero observations), then the estimated coefficient of $\bar{m}_{i,t}$ is 12.147, with a p-value of 0.000. Regressions using $m_{i,t}$ instead of $\bar{m}_{i,t}$ produce similar results: when the dependent variable is the level of HIV aid to Africa in billions of dollars, the coefficient of the media variable is 0.160 with a p-value of 0.028; when we use the log of HIV aid as the dependent variable, the coefficient of the media variable is 9.213 with a p-value of 0.000. Clearly, these simple regressions are not indicative of any causal effect and do not account for other possible determinants of HIV aid disbursement. Nevertheless, they point to a significant positive relationship between HIV aid disbursed to Africa and media coverage of African HIV issues.

4. Baseline results

4.1. OLS estimates

Our baseline model is:

$$(10) \ a_{i,t} = \alpha_0 + \alpha_1 \bar{m}_{i,t} + \mathbf{A}\mathbf{X}_{i,t} + \varepsilon_{i,t}$$

where a is the log of HIV aid to Africa provided by donor i in year t , $\bar{m}_{i,t}$ is the cumulative media coverage described in Section 3, $\mathbf{X}$ is a vector of other determinants of HIV aid disbursement, ε is the usual error term, and α_0 , α_1 , and the vector $\mathbf{A}$ are coefficients to be estimated.

The vector of controls $\mathbf{X}$ allows for a number of donor characteristics that might be relevant in determining the amount of HIV aid paid to Africa. Firstly, the amount of aid a country is

willing (or able) to disburse is likely to depend on its wealth and therefore we include the log of per-capita income as a regressor. Moreover, because our dependent variable is not scaled to any measure of economic size, we also include total GDP. Both per-capita and total GDP are expressed in logs of constant US dollars and their coefficients are expected to be positive. Second, some donors might have closer connections with Africa than others and maybe more inclined to give more aid for HIV. Connections can in turn refer to economic links and/or historical legacies. We proxy economic links by the donor's share of exports to Africa and historical legacies with a proxy equal to the number of current African states that the donor has colonized in the past⁹. Again, the coefficients on both the trade and the colonial history variables are expected to be positive. Third, political and social attitudes towards redistribution and transfers may affect the incentive to provide aid. We use two different variables to represent these attitudes: the ideological orientation of the incumbent government in the donor country and the degree of income inequality within the donor country.¹⁰ The ideological orientation variable takes three value, 0 for right-wing, 1 for centre, and 2 for left-wing. The common assumption in the political economy literature is that left-wing governments are more orientated towards progressive distribution, therefore we expect the variable to have a positive coefficient. The degree of inequality is measured by the Gini coefficient: a higher inequality is likely to reflect weaker social preferences for redistribution.

Pooled OLS estimates of equation (10) are reported in Column 1 of Table 1. As expected, bigger and richer economies tend to disburse more HIV aid to Africa. Attitudes towards

⁹ We also considered an alternative variable, namely the proportion of population in Africa that speaks the language of the donor. This variable however turns out to be highly insignificant in all models.

¹⁰ Both variables however present a problem: their time profile is a step function; that is, they tend to be constant for a few years, then suddenly change and remain constant for another few years. In the case of ideological orientation, this peculiar profile is due to the fact that governments generally maintain the same ideology throughout their duration. In the case of the Gini coefficient, the problem arises from the lack of annual observations, so that we are forced to impute the same figure over more than one year. This problem is likely to be more relevant when we use a dynamic panel estimator and take first-differences of all regressors (see Column 7 of Table 1).

redistribution are also significant: the donors that pay more aid – other things being equal – are those with a left-wing government and less pronounced income inequalities. Conversely, economic ties and colonial legacies do not appear to play any significant role. Finally, and perhaps most importantly for our analysis, the media coverage variable displays a positive and significant coefficient, albeit only at the 10% confidence level.

There are four reasons of concern with the estimates in Column 1: (i) the sample for estimation is automatically restricted to non-zero observations on the dependent variable, (ii) there may be latent country heterogeneity that the pooled OLS estimator cannot account for, (iii) media coverage maybe endogenous to HIV aid disbursement and (iv) autocorrelation in the dependent variable could make the static model (1) inadequate to capture dynamic effects. In what follows we show that the result concerning the effect of media coverage is actually strengthened once these concerns have been addressed.

4.2. Sample selection and outcome

Since we use logs of the dependent variable, the estimates in Column 1 are based on a sample that includes only non-zero observations. As noted in Section 3, in any given year, there are a certain number of donors not providing any HIV aid to Africa. To make sense of this data pattern, the amount disbursed by a given donor to Africa in a given year can be seen as the outcome of a two-stage decision process. In the first stage the donor decides whether or not to provide aid. If the decision is positive, then in the second stage the exact amount is decided. A suitable econometric framework to analyse this sample selection issue is provided by Heckman (1976). In a nutshell, the idea is to construct a model of two equations as follows:

$$(11) \quad z_{i,t} = \mathbf{W}'_{i,t} \mathbf{B} + u_{i,t}, \quad z_{i,t} = 1 \text{ if } z_{i,t}^* > 0$$

$$Prob(z_{i,t} = 1 | \mathbf{W}_{i,t}) = \Phi(\mathbf{W}'_{i,t} \mathbf{B}) \quad \text{and} \quad Prob(z_{i,t} = 0 | \mathbf{W}_{i,t}) = 1 - \Phi(\mathbf{W}'_{i,t} \mathbf{B})$$

$$(12) \quad a_{i,t} = \alpha_0 + \alpha_1 \bar{m}_{i,t} + \mathbf{A} \mathbf{X}_{i,t} + \varepsilon_{i,t} \quad \text{observed only if } z_{i,t} = 1$$

Equation (11) is the selection equation. The dependent variable $z_{i,t}$ takes value 1 if a positive amount of HIV aid is disbursed by donor i in year t . The set of regressors $\mathbf{W}$ includes the media variable, a constant term, and additional controls.¹¹ Equation (12) is the outcome equation and is identical to our baseline model (10), stressing the fact that the amount disbursed $a_{i,t}$ is observed only if $z_{i,t} = 1$. The errors $u_{i,t}$ and $\varepsilon_{i,t}$ are assumed to be correlated, jointly normally distributed, and homoskedastic. The conditional expectation of the outcome $a_{i,t}$ can then be written as:

$$(13) \quad E[a_{i,t} | z_{i,t} = 1, \mathbf{W}_{i,t}, \mathbf{X}_{i,t}, \bar{m}_{i,t}] = \alpha_1 \bar{m}_{i,t} + \mathbf{A} \mathbf{X}_{i,t} + \lambda \sigma(\mathbf{W}'_{i,t} \mathbf{B})$$

where σ denotes the covariance of the error terms and λ is the inverse of the Mills' ratio (that is, the ratio of the probability density function over the cumulative distribution function).

¹¹ In most applications, the set of controls is the same in the two equations and the identification of the model solely relies on the exclusion restrictions implied by the non-linearity of the selection equation. However, if the non-linearity is slight, then the identification is fragile. It is therefore advisable to add an exclusion restriction by including in the selection equation a regressor that does not appear in the outcome equation. The duration in office of the incumbent turns out to be significantly correlated with $z_{i,t}$ but uncorrelated with $a_{i,t}$. Our intuition is that a newly elected government might be more willing to establish good international relations and is therefore more likely to provide foreign aid. On the contrary, a government that has already been in office for some time is likely to have a shorter time horizon before elections and therefore might be more willing to use all funds available in the public budget to pursue domestic objectives. As a matter of fact, the estimated coefficient of the duration variable (not reported in Table 1 just to save space) in the selection equation is -0.025, significant at usual confidence levels. When included in the outcome equation instead the variable has a largely insignificant coefficient. Results from the Heckman procedure without the duration variable in the selection equation are not qualitatively different from those reported in the paper and can be obtained from the authors upon requests.

The estimation procedure involves first estimating the selection equation (11) by maximum likelihood to obtain estimates of $\mathbf{B}$. These estimates are then used to generate the inverse of the Mills' ratio $\hat{\lambda}_{i,t} = \phi(\mathbf{W}'_{i,t}\hat{\mathbf{B}})/\Phi(\mathbf{W}'_{i,t}\hat{\mathbf{B}})$ for each observation in the selected sample. Finally, the outcome $a_{i,t}$ is regressed on $\bar{m}_{i,t}$, $\mathbf{X}_{i,t}$, and $\hat{\lambda}_{i,t}$ to obtain the estimates of the parameters of equation (12).

Results from the Heckman procedure are reported in Columns 2 (the selection equation) and 3 (the outcome equation) of Table 1. The results are consistent with those reported in Column 1 and confirm the existence of a media effect: greater media coverage increases both the probability that a donor provides HIV aid to Africa and the volume of aid disbursed. Economic size and attitudes towards redistribution affect both selection and outcome in the same direction while colonial ties are not significant in any of the two equations. The coefficient of the share of exports to Africa remains negative and becomes statistically significant in the outcome equation. Notwithstanding this counterintuitive result is not particularly robust, as subsequent estimates show. All in all, it appears that the selection stage is not qualitatively different from the outcome stage and that the outcome stage is not dramatically altered by the consideration of the selection stage. Therefore, we focus the rest of the discussion on the baseline model (10).

4.3. Unobserved individual heterogeneity

We deal with the issue of unobserved individual heterogeneity by introducing a country-fixed effect in model (10).¹² The equation to be estimated is therefore:

¹² Note that accounting for individual unobserved heterogeneity goes some way towards addressing the second limitation of our measure of media coverage.

$$(14) \quad a_{i,t} = \alpha_1 \bar{m}_{i,t} + \mathbf{AX}_{i,t} + \eta_i + \varepsilon_{i,t}$$

Where η_i is a constant term that is allowed to differ across countries. Both the intercept α_0 and the number of colonies have to be dropped because perfectly collinear with η_i .

Estimates of model (14) are reported in Column 4. The first striking change relative to the previous estimates is the increase in the size and significance of the media coverage coefficient. On the contrary, the coefficients on economic size and attitudes towards redistribution, while maintaining the same sign, become non significant. Our interpretation is that these variables mostly explain cross-country differences in HIV aid disbursement and therefore have very little explanatory power once latent country heterogeneity is accounted for. Interestingly, economic links between donors and Africa measured by trade shares now have a positive effect, consistent with the expectation that a donor that trades more with Africa is also likely to disburse more aid for HIV in Africa.

4.3. Endogeneity and instrumental variable estimates

Media coverage is potentially endogenous with HIV aid disbursement. For instance, governments make announcements of future disbursements and with these announcements gain media coverage domestically. In this case, it is future disbursements that increase media coverage and not vice versa. Therefore, the pooled OLS and the fixed-effect estimators may be inconsistent. We therefore utilize instrumental variables (IV) estimation and employ generalised 2SLS. As an instrument we use media coverage in the donor country of HIV outside Africa. The intuition is that in a country where the media are more inclined to cover HIV-related news, then the coverage of HIV in Africa is also likely to be higher. At the same

time, however, HIV aid specifically destined to African countries probably responds to the media coverage of global HIV issues only because this later affects the media coverage of African HIV issues.

We report IV results of model (10) in Column 5 and of model (14) in Column 6. The coefficient of the media variable is positive and highly significant in both cases indicating a consistent pattern across all models. The finding that greater media coverage increases HIV aid disbursement to Africa is therefore confirmed. Of the other regressors, the share of exports continues to be the only coefficient that passes a zero restriction test in the presence of country fixed effects. A set of additional statistics confirm the validity of our instruments. In the model with fixed effects, the partial R² of the first stage regression is 0.66 and the null hypothesis is rejected in both the Anderson test of underidentification and the Cragg-Donald test of weak identification.

4.4. Dynamic specification and GMM estimates

Finally, we consider a dynamic version of model (14):

$$(15) \quad a_{i,t} = \alpha_1 \bar{m}_{i,t} + \alpha_2 a_{i,t-1} + \mathbf{A}\mathbf{X}_{i,t} + \eta_i + \varepsilon_{i,t}$$

The inclusion of the lagged dependent variable $a_{i,t-1}$ accounts for autocorrelation in HIV disbursement but also raises some estimation issues. In particular, in the presence of unobservable country-fixed effects, the lagged dependent variable is necessarily correlated with the country fixed effect η_i making least squares estimates inconsistent. Following a

popular approach in the econometric literature, we first difference equation (15) to get rid of the fixed effect:

$$(16) a_{i,t} - a_{i,t-1} = \alpha_1(\bar{m}_{i,t} - \bar{m}_{i,t-1}) + \alpha_2(a_{i,t-1} - a_{i,t-2} + \mathbf{A}(\mathbf{X}_{i,t} - \mathbf{X}_{i,t-1}) + (\varepsilon_{i,t} - \varepsilon_{i,t-1})$$

The resulting equation is a regression of the percentage change in HIV aid disbursement to Africa on the change in the media variable, the lagged change in disbursement, and changes in all of the other regressors. Arellano and Bond (1991) propose a GMM estimator that exploits two key assumptions: (i) the errors in levels are serially uncorrelated and (ii) the lagged values of the levels of endogenous regressors are valid instrument in the first-differenced equation. However, Blundell and Bond (1998) suggest using additional moment conditions by estimating (15) and (16) as a system, using lagged values of first-differenced endogenous variables as instruments in the level equation and lagged values of levels of endogenous variables as instruments in the first-difference equation. This system GMM estimator is more precise and has better finite sample properties and is therefore the one we utilize.

Column 7 reports the GMM estimates of the dynamic panel model. The autoregressive coefficient is significant, but smaller than one. This means that there is rapid mean reversion (that is, conditional convergence) in HIV aid disbursement. The estimated coefficient of the media variable is highly significant and positive while all of the other coefficients are not.¹³ This finding is not surprising given that the control variables mostly seem to proxy for country-fixed effects, as previously discussed. Two specifications validate the identifying assumptions underlying the GMM estimator. First of all, according to the Arellano and Bond

¹³ It should be emphasized that the coefficient on media coverage cannot be compared with those of previous regressions because it is from an equation in first-differences instead of an equation in levels.

(1991) test, the null hypothesis of no autocorrelation in first-differenced errors can be rejected for first-order correlation, but not for second order correlation. The relevant test-statistic is -2.3915 with a p-value of 0.02 for first order serial correlation and 0.23225 with a p-value of 0.82 for second order serial correlation. Because there is no evidence of second order correlation in first-differenced errors, then we can infer that errors in level are serially uncorrelated, as the GMM procedure necessitates. Second, the chi-square statistic of the Sargan test is 10.972 and the null hypothesis that the overidentifying restrictions are valid cannot be rejected at usual confidence levels. This result broadly suggests that the instruments used in the GMM procedure are valid.

INSERT TABLE 1 ABOUT HERE

5. Extensions and sensitivity analysis

In this Section we consider a number of extensions. We begin with Column 1 of Table 2 and re-estimate the model with a lagged dependent variable under the assumption that the media coverage variable is weakly exogenous rather than endogenous (as we did in Column 7 of Table 1). The estimator is the system GMM of Blundell and Bond (1998). It can be seen that results do not substantially change relative to those in Column 7 of Table 1. The estimated coefficient on the media variable is less precisely estimated, but is still significant (p-value = 0.064). At the same time, the autoregressive coefficient increases in both size and level of statistical significance. The other coefficients are still statistically insignificant. The specification tests again support the identifying assumptions, the test-statistic of the test of serial correlation in the first-difference errors is -2.023 (p-value 0.043) for the first order serial correlation and -0.3372 (p-value 0.7360) for the second order serial correlation; the

Sargan statistic of 12.52 implies that the null hypothesis that the over-identifying restrictions are valid cannot be rejected.

Next, we propose a different specification of the vector of controls $\mathbf{X}$. As shown in Section 4, the controls seem to play a significant role only insofar that they proxy country-fixed effects. When the model includes country dummies or when first-differences are taken to eliminate country fixed effects, the controls are insignificant. We therefore consider some additional donor characteristics that could be relevant in determining HIV aid disbursement. In particular, we suggest that disbursement might be affected by the economic cycle and the degree of political stability in the donor country. With respect to the economic cycle, our argument is that donors are more willing to increase HIV aid disbursement when their economy is booming.¹⁴ On the contrary, in a recession, spending for HIV aid is more likely to be cut in order to make room for other (probably domestic) spending priorities. For political stability, our theoretical expectation is that a more fragmented, less stable government would focus on domestic issues and possibly use spending to gain the consensus needed to remain in power. In these circumstances, fewer resources would be left to finance HIV aid, so that the effect of instability on HIV aid should be negative.

We measure the economic cycle by the output gap, defined as the difference between actual and trend output in percent of trend output. For political instability we use (i) the share of parliament seats held by the ruling party (or ruling coalition) and (ii) the Herfindhal index of government composition. This latter index is measured as the sum of squared shares of seats held by each party in the government and therefore takes higher values for less fragmented governments. With these variables we re-estimate model (15) using the system GMM

¹⁴ The economic literature has emphasized the pro-cyclical behaviour of aggregate aid (see for instance Pallage and Robe, 2001). However, to the best of our knowledge, the argument has not yet been tested on specific categories of aid.

estimator. Results are reported in Column 2. As can be seen, both the media variable and the autoregressive coefficient are significant at the highest confidence level. The media variable is again positive. Moreover, our hypotheses concerning the economic cycle and political instability also receive considerable empirical support. Again, the test of serial correlation indicates that there is no second-order serial correlation of the first-differences errors while the Sargan test suggests that the overidentifying restrictions are valid.

In Columns 3, 4, and 5 we turn our attention to the effect of annual (rather than cumulative) media coverage. To this purpose we re-estimate models (14) and (15) using $m_{i,t}$ instead of $\bar{m}_{i,t}$. Two versions of model (15) are estimated, one (Column 4) with the original baseline controls and the other (Column 5) with the controls for economic cycle and political stability. Results are qualitatively the same as those obtained in Section 4, even though now neither the output gap nor the index of government fragmentation remains statistically significant.¹⁵ The media variable still has a positive and significant coefficient, even though the point estimate is now smaller than what obtained for $\bar{m}_{i,t}$. Therefore, media coverage in a given year has a stronger marginal effect on HIV aid disbursement if it is part of a media campaign that lasts over time. In this respect, one could say that media coverage in a certain year generates positive externalities in terms of effect of the media campaign in future years.

The last bit of evidence concerns the role of international media coverage. The variable $\bar{m}_{i,t}^*$ replaces $\bar{m}_{i,t}$ in the estimation of two different versions of model (15): one with the baseline controls (Column 6) and one with the controls for economic cycle and political instability (Column 7). Results suggest that HIV aid to Africa also responds to international media pressure. As suggested in Section 3, domestic government might be willing to strengthen its

¹⁵ In light of the contradictory findings, we suggest that the effect of economic cycle and political stability on HIV aid disbursement is a relevant avenue of future research.

international reputation by taking action on an issue that world media cover to some extent. Moreover, as commitments to give aid for HIV are often taken within the context of international fora, the domestic government might be particularly aware of HIV aid campaigns of global media. We also suggest that international media coverage might affect domestic media coverage of HIV African issues, thus producing an additional indirect effect on HIV aid disbursement. The baseline controls remain non significant, with the exception of the autoregressive coefficient. The coefficients of the controls for political stability are instead both positive and significant, thus confirming that a more stable government tends to disburse more aid. Finally, the specification tests once again provide evidence in favour of the key identifying assumptions underlying the GMM estimator used for model (15): there is no evidence of second order serial correlation in the first-differenced error terms and the overidentifying restrictions are valid.

6. Discussion and conclusions

In this paper we study the effect that the growing media coverage of HIV issues in Africa has on a donor country disbursement of HIV aid to Africa. Our theoretical prior is that media coverage affects the perception that voters in donor countries have of the burden of HIV and the effectiveness of aid in African countries. Then, based on this coverage, voters define their preferred allocation of aid. The government will have to take voters' preferences into account when deliberating the amount of resources to be allocated to foreign aid programmes, so that in the end greater media coverage of HIV in Africa will push the government to disburse more HIV aid to Africa. In addition to the pressure arising from domestic media, however, we argue that the government might be responsive to international media coverage of African HIV issues. Here the idea is that the government may care about its international reputation.

Intervening on an issue that is broadly covered by the global press is then a way to strengthen this reputation. Therefore, the greater the coverage of Africa HIV issues by the global media the stronger the incentive for the domestic government to disburse HIV aid to Africa.

In order to test our theoretical hypotheses, we estimate various specifications of a model where HIV aid to Africa is regressed on proxies for media coverage and a set of controls. Our results are consistent and robust: greater media coverage increases the volume of HIV aid that donors pay to Africa. Both domestic and international media coverage are significant drivers of disbursement. Moreover, HIV aid is more responsive to cumulative media coverage. We also uncover some interesting evidence on the effect of donors' specific characteristics. Economic size and attitudes towards redistribution and equality only matter as country fixed effects, probably because they have remained fairly constant within countries over the period of observation. Historical and colonial ties do not seem to matter at all, while stronger economic linkages between donors and Africa appear to increase HIV aid disbursement, but this result is fragile to changes in the model specification. We also allow HIV aid to respond to political stability and the economic cycle in the donor country. We find effectively a more stable government pays more HIV aid and that HIV aid is pro-cyclical. However, these two results, especially the one on pro-cyclicity, need to be further investigated as they are dependent on the definition of media coverage.

Our findings could be interpreted as good news for the anti-HIV campaign as they imply that the media are an effective and powerful tool to strengthen governments'. Of course, one needs to worry about the willingness and ability of media to cover HIV related stories in African countries. But to the extent that these stories find their space in the media, a positive outcome follows in terms of disbursements that are mobilized to address specific HIV issues.

If we were to advise activists of the anti-HIV campaign on a media strategy, we would probably say that they should aim at obtaining a regular coverage of HIV issues in Africa over time, so to exploit the cumulative effect, rather than pushing for coverage at a specific point in time followed by long periods of neglect.

However, there might be an angle from which our findings are not such good news. Africa is hit by other diseases, such as for instance diarrhoea, malaria and tuberculosis, which severely affect its development prospects, cause significant infant mortality and which can be overcome only through the mobilization of international aid assistance. But in the media, these other diseases receive considerably less attention than HIV. The issue that HIV funding may be displacing the funding for other concerns has been raised by many (Crossette, 2005, Shiffman 2006 and 2008, Raviglione and Pio, 2002, and Molyneux, 2004). Therefore, the finding of this work suggests a potential pathway for this displacement. That is, HIV aid to Africa is responsive to media pressure and this may in turn imply a displacement of funding to other, less mediatised, diseases. This is particularly true if donors operate under a hard budget constraint, so that the amount of health aid paid for one disease (and/or to a specific region) decreases the amount of health aid paid for another disease (and/or to another region).

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Appendix:

Data sources, variables definition, and summary statistics

Variable	Definition (unless otherwise indicated, all variables are defined with respect to donor country i)	Source of raw data	Mean	Standard deviation
HIV aid to Africa	Aid for HIV paid by donor country i to African countries	HIME	16.003 (millions)	96.824
Media coverage (domestic, annual)	Total number of articles and press documents published in donor country i in year t which refer to HIV or AIDS and Africa or African in percent of the number of articles published in donor country i in year t on general HIV issues (therefore, not specific HIV issues in Africa) and other health concerns.	Factiva database	0.087	0.048
Media coverage (domestic, cumulative)	Sum of annual domestic media coverage of HIV in Africa scaled by the sum of the annual domestic media coverage of all HIV and other health concerns.	Factiva database	0.105	0.070
Media coverage (international annual)	Total number of articles and press documents on African HIV issues published in all other donor countries scaled by the number of articles on HIV and other health concerns published in all other donor countries.	Factiva database	0.100	0.044
Media coverage (international, cumulative)	Sum of annual international media coverage of HIV in Africa scaled by the sum of the annual international media coverage of all HIV and other health concerns.	Factiva database	0.121	0.062
Per-capita GDP	Log of average GDP per capita at constant prices, evaluated at 2005 PPP dollars.	World Development Indicators	29803	8589
Aggregate GDP	Log of total GDP at constant prices and evaluated at 2005 PPP dollars	World Development Indicators	1192051 (millions)	2209009
Inequality	Gini index of inequality of income distribution	UNU wider database	30.459	5.125
Ideology	Dummy variable taking value 0 for right-wing governments, 1 for centre governments, and 2	Database of Political	1.921	0.931

	for left-wing governments	institutions		
Trade	Exports of donor country <i>i</i> to Africa in percent of total exports of donor country <i>i</i> .	World Development Indicators	0.019	0.013
Colonies	Number of African countries colonized by donor country <i>i</i>	CIA World Factbook	2.045	4.452
Output gap	Difference between actual GDP and trend GDP in donor country <i>i</i> . Trend GDP is obtained as the non-stationary component of the GDP series resulting from the application of the H-P filter.	World Development Indicators	-0.32%	1.974%
Majority	Proportion of seats in the parliament controlled by the ruling party (or ruling coalition)	Database of political institutions	0.558	0.104
Herfindhal index	Sum of squared shares of seats held by each party in the government and therefore takes higher values for less fragmented governments	Database of political institutions	0.707	0.270

Notes. Data sources are available as follows:

Factiva database: <http://www.factiva.com>

World Development Indicators: <http://data.worldbank.org/>

UNU Wider Database: http://www.wider.unu.edu/research/Database/en_GB/database/

Database of Political Institutions:

<http://econ.worldbank.org/WBSITE/EXTERNAL/EXTDEC/EXTRESEARCH/0,,contentMDK:20649465~pagePK:64214825~piPK:64214943~theSitePK:469382,00.html>

CIA World Factbook: <https://www.cia.gov/library/publications/the-world-factbook/>

List of donors: Australia, Austria, Belgium, Canada, Switzerland, Germany, Denmark, Spain, Finland, France, United Kingdom, Greece, Ireland, Italy, Japan, Luxembourg, Netherlands, Norway, New Zealand, Sweden, United States.

Table 1: Baseline estimates

	1	2	3	4	5	6	7
Media coverage	5.276*	5.497***	8.553*	11.059***	9.410***	9.888**	20.762***
Per-capita GDP	5.366***	1.651***	6.277***	3.898	5.924***	3.764	-49.0944
Aggregate GDP	0.938***	0.371***	1.177***	2.443	0.977***	2.796	39.639
Inequality	-0.068**	-0.069***	-0.109*	-0.046	-0.067	-0.043	-0.496
Ideology	0.359***	0.251***	0.512**	0.087	0.098	0.080	-0.331
Trade	-12.243	-24.317**	-28.577	57.108***	49.132***	55.387***	-67.159
Colonies	0.035	0.035	0.054	...	-0.060	...	...
constant	-65.357***	-24.739***	-80.968***	...	-73.307***	...	...
Lagged aid	..	..	..	..	..	..	0.264*
No.Obs	255	364	255	255	255	255	225

Notes: The dependent variable is the log of aid for HIV to African countries. Estimators are as follows: Pooled OLS (column 1), Heckman two-step procedure (column 2 and 3), panel least squares with fixed effects (column 4), two-stage instrumental variables without fixed effects (column 5) and with fixed effects (column 6), and Blundell-Bond system GMM (column 7). *, **, *** denote statistical significance at 10%, 5%, and 1% confidence level respectively.

Table 2: Extensions and sensitivity

	1	2	3	4	5	6	7
Lagged aid	0.312*	0.468***	...	0.619***	0.834***	0.311*	0.454***
Media coverage	16.743*	12.119***	5.278***	5.045*	6.828**	13.120**	10.380**
Per-capita GDP	1.770	...	2.452	-11.872	...	-52.057	...
Aggregate GDP	-0.612	...	4.413	9.679	...	41.385	...
Inequality	-0.133	...	-0.026	0.305	...	-0.113	...
Ideology	-0.094	...	0.038	0.122	...	-0.411	...
Trade	-0.845	...	53.889***	5.776	...	-52.842	...
Output gap	...	10.638*	...	...	-1.604	...	9.510
Majority	...	1.531	...	...	0.597	...	4.202**
Herfindal index	...	3.970**	...	...	1.007	...	3.132*
Constant	...	...	-131.116*	...	...	...	...
No. Obs	225	226	255	225	226	225	226

Notes: The dependent variable is aid for HIV to African countries. Estimates are by Blundell-Bond system GMM with the exception of column 3 where we use panel least squares with fixed effects. *, **, *** denote statistical significance at 10%, 5%, and 1% confidence level respectively.

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