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The purpose of the UNFPA/NIDI Resource Flows Newsletter is to inform donor and developing country governments, public and private organisations, research institutes, universities and civil society about resource tracking for population and AIDS activities in general and the role of the Resource Flows (RF) project in particular.

Re-examining Donor Funding for Population and HIV/AIDS Activities

1. Introduction

The issue of which factors determine the level of donor funding has serious implications for researchers and policy makers. Most studies on donor funding have focused on the *cross-country allocation* of a given amount of donor funding. Among these is the often cited study by Alesina and Dollar (2000) which finds that the allocation of donor funding is mainly dictated by political and strategic considerations, in particular the colonial past and the voting pattern in the UN. The more recent contribution by Claessens et al. (2009) shows that since the fall of the Berlin wall in 1989, foreign aid has responded more to poverty and the quality of the policy and institutional environment in the recipient countries. Despite the rich literature on foreign aid allocation, little is written on the determinants of the total *level* of funding and even less on the issue of what determines the level of donor funding for specific goals and activities. The few studies on the determinants of the level of donor funding (Round and Odedokun, 2004; Van Dalen and Reuser, 2006; Chong and Gradstein, 2008; Van Dalen, 2008) all find that the GDP of the donor country is one of the most important factors that affect foreign aid.

In this newsletter the issue of what determines the level of donor funding is re-examined from the perspective of funding for population and HIV/AIDS activities. Using panel data for 22 OECD/DAC (Development Assistance Committee) member countries over the period 1996-2007, we conduct an empirical inquiry of the determinants of donor funding that distinguishes between restricted and unrestricted funding. The restricted (i.e. earmarked) funds are targeted to projects within the four so-called ICPD (International Conference on Population and Development) categories: (i) family planning services; (ii) basic reproductive health services; (iii) STDs and HIV/AIDS activities; and (iv) basic research, data, and population and development policy analysis. The unrestricted (i.e. non-earmarked) funds are provided within no specific ICPD category, but for population activities in general.

By using disaggregated data on donor funding and by applying a dynamic panel data estimator, we can provide fresh insights into the determinants of funding behavior of OECD/DAC members. In contrast to previous studies mentioned above, the results here show that GDP is not the most important factor that explains funding by donor countries. While GDP still plays an important role in explaining the level of unrestricted funds by donor countries, it has no explanatory power for the level of restricted funds. More specifically, our results suggest that unrestricted funding seems to be more responsive to economic developments in donor countries. Restricted funding, on the other hand, appears more non-discretionary. This finding has an interesting implication with regard to items in donor aid budgets that could be particularly affected in times of economic crisis.

Besides making a contribution to the literature on donor behavior, this newsletter complements the literature that differentiates between restricted and

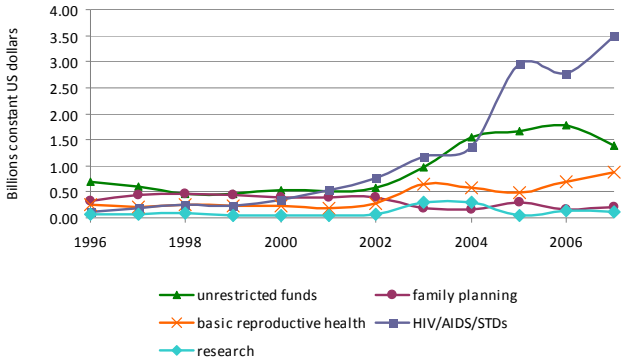
unrestricted donor funding. The literature is rich in articles that examine effectiveness of different forms of funding. Studies on effectiveness of project-tied funding are abundant and interest in effectiveness of unrestricted funding has increased substantially during recent years (Koeberle et al., 2006; Elbers et al., 2009). Others have studied different forms of funding from different perspectives. For instance, Bulir and Hamman (2003) find that program aid tends to be more volatile than project aid. We take a different angle on the issue by focusing on the determinants of different funding categories. In the debate about how to channel donor funding and which funding methods are most effective, the factors that influence the behavior of donors are of importance.

The set up of the newsletter is as follows. In Sections 2, some stylized facts of donor funding for population and HIV/AIDS activities are presented. Section 3 examines which factors are relevant in explaining the stylized facts. Section 4 concludes and puts the findings in the context of recent economic developments.

2. Level and structure of donor funding for population and HIV/AIDS activities

The global health community has recognized that spending on population and HIV/AIDS activities in developing countries is essential for meeting the ICPD targets and the Millennium Development Goals. As a result, increasing amounts of international aid have been given for these purposes to health sectors in developing countries. During the period 1996-2007 total funding for population and HIV/AIDS activities by donor countries increased from 1.4 to 6.1 billion US dollars (in constant 2000 dollars). To get an overview of how the structure of funding has evolved, *Figure 1* presents unrestricted and restricted funds generated by donor countries. The most dominant trend is the focus on HIV/AIDS brought forth by the AIDS pandemic: the funds allocated to STDs/HIV/AIDS increased in real terms from 0.1 billion in 1996 to 3.5 billion in 2007.[1] Unrestricted funds doubled in real terms from 0.7 to 1.4 billion during the same period. Funds allocated to basic reproductive health services also showed an upward trend (from 0.3 to 0.9 billion). Funding for research activities was quite volatile during the twelve years under consideration. What seems worrisome is that funds allocated to family planning activities declined in nominal and real terms.

Figure 1. Funding for population and HIV/AIDS activities activities, OECD/DAC countries



Notes: Constant US dollars refer to the 2000 price level.
Source: UNFPA/NIDI Resource Flows database.

Although informative, aggregate data can mask important variations in behavior of individual donors and cannot disentangle the driving forces of donor funding for population and HIV/AIDS activities. We turn next to empirical tests in hopes of providing answers to the question what lies behind the trends outlined in this section.

[1] The remarkable increase of funds allocated to STDs/HIV/AIDS between the years 2004 and 2005 is due to the implementation of the US President's Emergency Plan for AIDS Relief (PEPFAR). PEPFAR holds a place in history as the largest effort by any nation to combat a single disease.

3. Estimation results

While reference to the allocation of funding across recipient countries permeates the literature on aid, there have been only few studies on determinants of the level of funding from a donor perspective. Guided by these studies (Round and Odedokun, 2004; Van Dalen and Reuser, 2006; Chong and Gradstein, 2008; Van Dalen, 2008) and feasibility of empirical testing, we select and test for the effect of the following potential explanatory variables:

- Level of income as measured by GDP (in constant 2000 US dollars). As shown in the studies mentioned above, the level of income is expected to have a positive effect on the level of funds for population and HIV/AIDS activities. The rationale is simple: as the level of income rises, the propensity to give aid should increase as well.
- Official development assistance (ODA) as a percentage of GDP. It can be argued that donor countries that give more foreign aid in general are also more likely to donate for population and HIV/AIDS activities in particular.
- Size of the government measured as the share of government expenditures in GDP. Similar to the reasoning for ODA, it is expected that a bigger government budget would allow more funds to flow to developing countries.
- Unemployment rate as a proxy for the business cycle. The implicit assumption is that economic upturn accompanied by a decreasing unemployment rate will lead to an increase in the level of funds and vice versa.
- Fiscal stance measured as the ratio of general government balance to GDP. In policy debates, insufficient levels of donor funding are generally associated with tight budgets and the need to reduce fiscal deficits in donor countries.
- Government expenditure on health as a percentage of total government expenditure. The hypothesis is that countries with higher spending on health are likely to be more generous when it comes to funding of population and HIV/AIDS activities internationally.
- Reproductive health status measured by maternal mortality ratio and adult HIV prevalence. One might postulate that reproductive health status in donor countries is likely to have an impact on altruism toward reproductive health in poor countries. Even if aid is not motivated by altruism, reproductive health at home could have an impact on giving for population and HIV/AIDS activities abroad: for instance, countries with higher HIV prevalence could be more concerned about the spreading HIV/AIDS pandemic and thus willing to donate more for this purpose.[2]
- Religion measured as the presence of Catholic or Protestant religions as one of the two dominant religions in a donor country.[3] Religious beliefs are expected to play a major role in funding of population and HIV/AIDS activities.
- Political situation measured as the ideological orientation of government. Right-wing governments are generally perceived to exhibit lower aid efforts for population and HIV/AIDS activities. It might be also posited that right-wing regimes are more likely to earmark their funding.
- Interdependency of donor funding measured as the total donations for the specific funding

[2] Instead of using HIV prevalence in donor countries as an explanatory variable, we experimented with including HIV prevalence rates in Sub-Saharan Africa and globally. The coefficients on these variables were statistically insignificant.

[3] Alternative specifications of religious variables, such as the primary religion in a country, were also considered. The estimation results were qualitatively similar.

category provided by all other OECD/DAC country members except for the one being examined (at the 2000 US dollar value). We have no prior expectations about the effect of this variable. The funding behaviour of a donor country could be a positive function of the funding efforts of other donor countries due to "peer pressure". However, individual donor countries could also enjoy a "free ride" on the foreign aid efforts of other donor countries (a la Olson, 1965).

- EU membership. What is assumed here is that EU member countries may exhibit different funding behavior than non-EU members.
- Temporal factors. There are several time-related factors that might affect funding for population and HIV/AIDS activities. As discussed earlier, funding for HIV/AIDS soared in the early 2000s due to the rapid spread of the disease. We include year dummies to capture such aggregate time shocks. We also include a time trend variable that, after controlling for the effect of aggregate time shocks, would show whether the level of funding exhibited a rising or declining trend during the study period.

Data for the explanatory variables come from different sources. The data source for the series on GDP, GDP deflator, unemployment rate, and fiscal stance is the IMF World Economic Outlook (WEO) database. Data on the size of the government come from the World Bank World Development Indicator (WDI) database. The ODA data are taken from the OECD/DAC Creditor Reporter System (CRS) database. WHO Statistical Information System (WHOSIS) database is the source for data on government expenditure on health and maternal mortality ratios. Adult HIV prevalence rates are taken from UNAIDS (2008). The religion dummies are calculated based on data reported in the Central Intelligence Agency (CIA) World Factbook. Data on ideological orientation of government are from Beck et al. (2001). All financial variables are expressed in logarithmic terms. Table 1 shows only the model specification including explanatory variables that provided the best fit.[4]

The data set consists of observations for 22 OECD/DAC country members for the period 1996-2007.[5] The panel is unbalanced as we do not have data for the dependent variables for each year for each country.[6] To accommodate the unbalanced and dynamic nature of the data, we use a system generalized method of moments (GMM) estimator developed by Blundell and Bond (1998), who build on the work by Arellano and Bover (1995). The advantage of the estimator is that it allows past realizations of the dependent variable to affect its current level. This alleviates possible biases in the coefficients caused by the fact that funding for population and HIV/AIDS activities tends to be persistent over time. The estimator also minimizes possible simultaneity or reverse causation problems, and comes with the advantage of higher efficiency and less bias for panels with many cross-sections and few time points.

[4] The conclusions do not differ substantially when all the explanatory variables are used.

[5] Out of the current 24 members of the OECD/DAC, the European Commission (EC) and South Korea are not included in the analysis. Since the analysis is at the country level, it is difficult to include the EC. South Korea joined the OECD/DAC only as of 1 January 2010.

[6] To be specific, Greece is a latecomer to the pool of donors. Also, information on funding per certain categories is missing for at least one year for Austria, France, Ireland, and Spain.

Table 1. Dynamic panel estimations of the level of donor funding for population and HIV/AIDS activities, OECD/DAC country members, 1996-2007

		Restricted funds				Total funds
		Family planning	Basic reproductive health	STDs/ HIV/ AIDS	Research	
Lagged dependent variable	0.143	0.249***	0.239*	0.305**	0.282**	0.405***
	(0.131)	(0.094)	(0.131)	(0.134)	(0.125)	(0.102)
GDP	1.156**	-1.210	0.192	-5.253	0.401	0.662***
	(0.468)	(3.331)	(0.244)	(3.894)	(2.268)	(0.208)
ODA/GDP	0.994	7.280	-2.107**	0.991	8.987	1.644***
	(0.701)	(5.448)	(1.047)	(4.063)	(7.166)	(0.628)
Government size	0.085	0.575	-0.052	0.103	0.134	0.002
	(0.125)	(0.784)	(0.263)	(0.524)	(1.345)	(0.090)
Unemployment	-0.004	0.663	-0.123	-0.220	-0.081	-0.017
	(0.093)	(0.493)	(0.130)	(0.663)	(0.529)	(0.067)
Fiscal balance	0.027	0.898***	-0.011	0.074	0.182	0.001
	(0.039)	(0.303)	(0.108)	(0.197)	(0.395)	(0.038)
HIV prevalence	-2.534	8.198	-3.764	-0.199	57.617**	-0.417
	(2.421)	(15.701)	(3.535)	(16.796)	(22.515)	(1.761)
Catholic	0.141	-4.342	0.253	-5.054	-1.204	0.057
	(2.058)	(9.189)	(1.404)	(7.267)	(9.580)	(1.524)
Protestant	-0.181	4.167	1.238	-4.200	18.456	1.318
	(1.022)	(11.164)	(2.202)	(6.566)	(13.407)	(1.239)
Interdependency	-7.309***	-9.717	-10.316***	-2.142*	-3.152	-3.525***
	(1.949)	(8.080)	(3.736)	(1.192)	(2.086)	(1.177)
EU member	1.375	-13.404	1.926	-6.501	-6.810	-0.784
	(1.485)	(11.790)	(2.371)	(7.107)	(8.041)	(0.775)
Trend	0.523***	-1.042	1.747***	1.185**	-0.079	0.544***
	(0.131)	(0.663)	(0.613)	(0.512)	(0.294)	(0.169)
Number of observations	220	220	220	219	220	226
Prob > χ^2	0.000	0.000	0.000	0.000	0.000	0.000
Arellano-Bond test (AR1)	-2.358	-3.125	-1.744	-2.851	-3.492	-2.767
Arellano-Bond test (AR2)	0.939	1.033	1.351	-1.630	1.596	1.856

Notes: The sample includes 22 OECD/DAC country members. Estimations are performed with the Arellano-Bover/Blundell-Bond dynamic panel estimator. An intercept and year dummies are included in all regressions. Robust standard errors are reported in parentheses. *** denotes significance at <1% level; ** denotes significance at <5% level; * denotes significance at <10% level.

The most important conclusion that we can draw from the estimates presented in Table 1 is that, once we account for past realizations of the dependent variable, GDP does not affect the level of restricted funding. Since these are funds that go directly to projects/programs, this result implies that commitments might not be easily withdrawn or adjusted according to economic conditions in donor countries. GDP has still an important role in explaining the level of unrestricted, i.e. non-earmarked, and funding. Actually, unrestricted funding is quite sensitive to the level of income in donor countries: if GDP of donor countries increases by one percent, unrestricted funding will increase by 1.16 percent; the converse applies when GDP declines. Unrestricted funding could be thus considered a "luxury good" in the donor budget and as such quite vulnerable amid global crisis. On the other hand, commitments to the restricted funding categories seem to be more firm and this makes it more difficult to change plans when income goes up or down. Total funds – as a sum of unrestricted and restricted funds – are affected by both past realizations and GDP.

As postulated earlier, the decision to donate for population and HIV/AIDS activities is an integral part of the donor government's decision on ODA. Indeed, higher overall spending has a positive effect on total funds for population and HIV/AIDS activities, although the effect on the underlying funding categories is hard to detect as the estimated parameters are statistically insignificant. Nevertheless, the sign of the parameters for the underlying categories is in accordance with expectations. An exception is the funding for basic reproductive health. The statistically significant and negative correlation between ODA and funding for basic reproductive health is puzzling. The negative effect may be a reflection of the era in which the attention of the US, a country with the one of the lowest ODA as a percentage of GDP, shifted away from basic reproductive health activities. We return to this issue below.

Unemployment, the size of government and fiscal balance do not appear to influence funding for population and HIV/AIDS activities. This general rule does not apply only in the case of funding for family planning activities, where larger fiscal surplus is associated with an increase in funding. This association is mainly driven by Southern European countries (Greece, Portugal, Italy), which have relatively large fiscal deficits and at the same time donate relatively little to family planning activities. The result that funding is largely unaffected by fiscal balance may be taken as contradictory to popular views about budget constraints of developed countries being the main reason for declining aid to developing countries. The result is, however, challenged by the sensitivity analysis presented below.

Except for the curious effect on funding for research activities, HIV prevalence in a donor country does not lead to higher levels of funding for the other spending categories. EU members do not seem to behave differently from other donor countries. Contrary to expectations and to findings of prior research (Van Dalen and Reuser, 2006; Van Dalen, 2008), we do not find evidence of effect of the religious denomination of donor countries. Political factors in donor countries (coefficients not shown in the table) are also not significantly associated with funding levels.[7]

As suggested above, the funding behavior of other donor countries can have an effect on the funding behavior of an individual donor country. Table 1 clearly shows the presence of free-riding behavior: individual donor countries seem to provide less funding for population and HIV/AIDS activities

[7] There are, of course, significant problems in attempting to define measures of religion and political situation. Thus, one should be careful in putting too much weight on the religious and political factors.

when other countries donate more. As argued by Van Dalen (2008), in the context of a public good such as reproductive health one can expect that individual contributions are negatively affected by what others give as donors care only about the level of the public good. When other donors already fund most of this public good, an individual donor country has an incentive to reduce its funding efforts.[8]

In most cases, funding for population and HIV/AIDS activities exhibits a consistent upward trend during the study period. The trend is particularly strong in the case of funding for basic reproductive health and STDs/HIV/AIDS. The significance of the time trend suggests that there may be other, often difficult-to-quantify factors that play an important role in determining the level of funding.[9] Nevertheless, the evidence that donor income has a different effect on unrestricted and restricted funding is a finding worthy of further attention.

Robustness analysis

Because the finding regarding the lack of effect of GDP on restricted funding for population and HIV/AIDS activities runs contrary to much of the literature on determinants of donor funding, we performed an extensive sensitivity analysis. Since the US is by far the biggest donor for population and HIV/AIDS activities, we have re-estimated Table 1 by excluding the US. Although the fit of the model was reduced somewhat, the parameter estimates were in general qualitatively similar. One robust observation that could be derived from the estimates was the tight relationship between national income development and the generation of unrestricted funds for population and HIV/AIDS activities. The level of restricted funding categories was again unaffected by GDP. Another noteworthy outcome of the sensitivity analysis was the reduction in both size and statistical significance of the coefficient on ODA, indicating that the result in Table 1 was largely driven by the US. It was also striking that the negative effect of interdependency becomes considerably larger in the case of restricted funding categories. This suggests that donor countries other than the US tend to exhibit stronger free-riding behaviour in terms of restricted funding.

Next, to reduce the potential endogeneity bias, we re-estimated the model with lagged explanatory variables. Lagging the explanatory variables did not appreciably weaken the main conclusion about the lack of effect of GDP on restricted funding. Two findings, however, merit further discussion. First, the coefficient on fiscal balance in the case of total funds turned positive and statistically significant. This clearly shows that donor countries do take into account the fiscal situation of the previous year and adjust the size of aid for population and HIV/AIDS activities accordingly. Second, results showed no significant relationship between lagged interdependency and the level of funding, suggesting that endogeneity bias might be responsible for the negative correlation between interdependency and the level of funding shown in Table 1.

We also conducted robustness analysis when interdependency is taken as an endogenous variable instead of a strictly exogenous one. Results did not invalidate previous results. However the coefficients on interdependency, though still statistically significant, were lower than the corresponding coefficients in Table 1. Again, this suggests that the total donations for a specific funding category provided by all other OECD/DAC country members

[8] While Chong and Gradstein (2008) and Van Dalen (2008) also find evidence of free-riding behavior, Round and Odedokun (2004) find support for the peer-pressure effect. It remains an open question in the literature in which direction the interaction among donors affect individual donations.

[9] Although the Arellano-Bond tests for serial correlation in the first-differenced errors do not present evidence that the model is misspecified. The tests indicate significant negative correlation in the first-differenced residuals but not in the second-order residuals (only in the case of total funds the test rejects the null hypotheses of no serial correlation of second order and that only at the 10% level). This indicates that the key assumption for the consistency of the system GMM estimator is fulfilled.

except for the one being examined are an endogenous variable. There are a number of reasons for this. First, OECD/DAC member countries often decide jointly on their contributions to multilateral organizations. Second, when trying to achieve the aid targets determined by DAC, donor countries might take into account the funding of other donors. Third, as argued above, in the context of a public good a "rational" donor may be inclined to reduce its level of funding when funding by other donors is expected to increase, regardless of DAC targets and other forms of formal collective decisions.

Finally, it could be argued that the choice of allocating aid among the funding categories is a simultaneous choice and interdependence among the funding categories is bound to be present. To account for this possibility, we employed seemingly-unrelated regression (SUR) model using random effect estimators in the context of unbalanced panel data.[10] Results generally confirmed previous results regarding the lack of effect of GDP on restricted funding.

4. Conclusion

Much of the previous research on the level of donor funding found a strong positive correlation between donor funding and GDP of donor countries. This is not surprising given that foreign aid is a discretionary item in the government budget. When a government encounters an economic downturn, spending priorities need to be adjusted and foreign aid could be negatively affected by these changing priorities. Or the other way around, in times of economic growth donor governments can be expected to show greater generosity. This finding may be called into question, however, since no previous empirical research has properly allowed for the possibility that funding commitments might not be easily withdrawn or adjusted according to economic conditions in donor countries. We address this shortcoming by analyzing the level and structure of funds for population and HIV/AIDS activities using a dynamic panel data estimator.

The results strongly support the notion that it is important to differentiate between restricted (earmarked) and unrestricted (non-earmarked) funding. There is undoubtedly some discretion over both types of funding. Nevertheless, unrestricted funding seems to be more responsive to economic developments in donor countries as demonstrated by the strong positive correlation of this type of funding with GDP. Unrestricted funds are thus easier to increase or cut according to discretionary criteria. Restricted funding, on the other hand, can be viewed as more undeliberate or non-discretionary. In this regard the recent decision of the US Congress to appropriate more than 648 million US dollars in foreign assistance to family planning and reproductive health programs worldwide should be considered good news for advocates of reproductive and sexual health and rights.[11]

Our approach has some limitations. First, we include just donor characteristics as explanatory variables and do not control for recipient country characteristics that could also affect the donor's choice between different forms of funding (Knack and Eubank, 2009). This choice was made because our focus is on the determinants on the *level* of funding from the donors' perspective and not on the allocation of funding across recipient countries. Second, our dependent variables may contain measurement error since donors use some subjective

[10] The approach is based on constructing a stepwise algorithm using generalized least squares (GLS) and the maximum likelihood (ML) procedures. The method was originally developed by Biorn (2004).

[11] For details of the renewed US commitment to funding of reproductive health activities worldwide, see the speech of the US Secretary of State, Hillary Rodham Clinton, delivered on 8 January 2010.
http://www.state.gov/secretary/rm/2010/01/135001.htm
(accessed May 30, 2010).

judgment in determining whether foreign aid is restricted or not. Sometimes funding delivered in the form of projects can actually qualify as unrestricted. Third, even if we assume that donors categorize similar funding flows more or less in the same fashion, in the presence of fungibility of foreign aid (Feyzioglu et al., 1998), the distinction between restricted and unrestricted funding is somewhat obscured. Keeping in mind these limitations, we can nevertheless draw some policy implications.

Advocacy of the new agenda for aid effectiveness embodied in the 2005 Paris Declaration and its follow-up, the Accra Agenda for Action,[12] reflects a view that provision of unrestricted funds is the best funding method for alignment with priorities of recipient countries and improved harmonization among donors. As a result, donors have pledged to move away from project-related aid in favor of general and sector budget support. However, our results show that unrestricted funding is more susceptible to economic conditions in donor countries and as such probably more vulnerable to fluctuations than project support, which is usually committed upfront and disbursed on a multi-year basis. In this regards, we concur with the conclusions of Eifert and Gelb (2008) about the need to set guidelines and make multi-year commitments in the case of unrestricted funding. Some donors have begun to experiment with longer-term budget support commitments as a way of providing a more reliable stream of funding through non-earmarked transfers. The partnership general budget support (PGBS) programs are the case in point (Hubbard, 2007).

An important implication of the findings in this paper considers the effect of the global economic crisis on donor funding for population and HIV/AIDS activities. Unrestricted funds are at higher risk to be affected.[13] This does not mean that we will not observe cuts in restricted funds as well. For instance, a recent report by UNAIDS and The World Bank (2009) expresses the concern that, though there are no reports of substantial cuts in donor assistance for HIV/AIDS activities for 2009, in many countries the current funding commitments for HIV treatment programs will end in 2009 or 2010.[14] This raises the fear that external aid for HIV/AIDS activities will not increase or even be maintained at the current level. Whether these fears materialize or not is left for future research.

[12] http://www.oecd.org/dataoecd/11/41/34428351.pdf (accessed June 3, 2010).

[13] Indeed, preliminary data for 2008 show that while restricted funding targeted to projects within the four ICPD categories increased by 29 percent, unrestricted funding for population and HIV/AIDS activities decreased by 22 percent (in current US dollars).

[14] The HIV prevention programs are even more vulnerable, because they are politically easier to cut.

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