Preliminary: Please do not cite without permission.

Estimating the Impact of U.S. International Family Planning Policies on HIV/AIDS Infection Rates in Sub-Saharan Africa

Elizabeth Asiedu
Associate Professor
Department of Economics
University of Kansas
Lawrence, KS 66045
Email: asiedu@ku.edu

and

Donna K. Ginther
Associate Professor
Department of Economics
University of Kansas
Lawrence, KS 66045
Email: dginther@ku.edu

Abstract:

This paper examines whether the Mexico City Policy, which restricts organizations that receive US family planning funds from discussing abortion, affected the AIDS crisis in Sub-Saharan Africa. Although abortion and HIV/AIDS are not directly associated, the Mexico City Policy resulted in large funding cuts for non-governmental organizations that provided family planning services in Africa. Using data from 44 countries from 1970 – 2001 and difference-in-differences estimation, we find that the Mexico City Policy significantly increased AIDS infection rates in countries that received US family planning funds.

JEL Codes:

Key words: HIV/AIDS, family planning

Acknowledgements: Serena Huang provided excellent research assistance. Ginther acknowledges financial support from NSF grant SES-0353703 and NICHD Grant R03HD048931. Any errors are our own responsibility.

1. Introduction and Motivation

During the Reagan and first Bush Administrations, i.e., 1984-1992, the U.S. implemented the "Mexico City Policy" which prohibits non-U.S. non-governmental organizations who receive USAID family planning funds from providing or promoting abortion. Indeed, there is a widespread perception that during the Reagan-Bush era, U.S. family planning policies abroad emphasized abstinence over condom use. Although HIV/AIDS and abortion are not closely associated, the Mexico City Policy resulted in large funding cuts for non-governmental organizations engaged in family planning (2001). This paper examines the impact of changes in U.S. international family planning policies on HIV/AIDS rates in Sub-Saharan Africa (SSA). There is anecdotal evidence suggesting that U.S. policies have affected the provision of health care in SSA. For example seventeen family planning centers in Uganda and five in Kenya have closed due to USAID's withdrawal of funding (Jones, 2004). However, the effect of these policies and the effect of the Mexico City Policy in SSA have not been systematically studied. We find that the Mexico City Policy exacerbated the HIV/AIDS crisis in Sub-Saharan Africa.

There are two reasons why we focus on the Sub-Saharan African region and on the disease, HIV/AIDS. First, AIDS is the leading cause of death among adults ages 15-59 in SSA. Oster (2005) models sexual behavior and HIV infection rates in SSA. She finds that HIV transmission rates are associated with untreated sexually transmitted diseases. Differencs in HIV rates across Africa are correlated with differences in sexual behavior. Thus, changes in family planning policies will likely have a significant impact on the HIV/AIDS infection rates.

Second, HIV/AIDS has adverse long-run and short-run macroeconomic effects for SSA (Kalemi-Ozcan. 2006).[1] The harmful economic effects of HIV/AIDS occur through several channels. For example in countries with high infection rates, a substantial share of government

[1] See Canning (2006) for a discussion on the economics of HIV/AIDS in low income countries.

revenue is spent on the prevention and treatment of the disease. A typical example is Botswana, where about 38 percent of the adult populations are infected with the disease. It is estimated that government spending on HIV/AIDS will reach about 20% of the total budget by the end of the century (Blumenthal, 2005). Increased government spending on HIV/AIDS implies a reduction in government expenditure on other important goods and services such as infrastructure, education and other diseases. Also, similar to other diseases that have high adult morbidity, HIV/AIDS lowers output and welfare through increased absenteeism, reduction in worker productivity and a decline in labor supply (Savedoff amd Schultz, 2000). For example, as at 2005, Zimbabwe has lost about 20 percent of its labor force to HIV/AIDS (Blumenthal, 2005). Another devastating effect of the epidemic is that it has led to a substantial reduction in life expectancy. For example, life expectancy in Botswana is about 35 years and it is estimated that life expectancy without AIDS would be about 67 years, suggesting that the disease has reduced life expectancy by about 34 years (UNICEF, 2006). A shorter life span has an adverse effect on economic growth because it decreases the incentives to invest in human capital (Kalemli-Ozcan Ryder and Weil, 2000) and to save for the future (Bloom, Canning and Graham, 2003). Finally, as at 2005, about 12 million children ages 0-17 have lost one or both parents to AIDS and the number will increase by about 15 percent by 2010 (UNICEF, 2006). The creation of a generation of AIDS orphans may lead to low levels of health and educational investments in these children and therefore lower productivity in the future.[2]

Our empirical analysis employs data for 46 countries in SSA over the period 1970-2003 and we estimate a difference-in-differences model to examine the impact of U.S. policy on AIDS rates in SSA. We find a positive causality between U.S. international family planning polices

[2] For an alternative perspective, Young (2005) argues that the long-run effect of AIDS in South Africa will have a positive impact on per capita consumption.

and AIDS. Specifically, we find that AIDS rates were higher for countries that received U.S. family planning than for countries that did not. Furthermore, for countries that received USAID funding, the AIDS rate was higher during the Reagan-Bush era. Thus, our results suggests that US international family planning policies (which includes the Mexico City Policy) increased AIDS rates in countries in SSA that received US family planning funds.

The remainder of the paper is structured as follows: Section 2 provides some background information about HIV/AIDS in SSA, Section 3 discusses the estimation procedure and the empirical results and Section 4 concludes.

2. HIV/AIDS in Sub-Saharan Africa: Brief Background Information

- *The majority of the people infected with HIV/AIDS live in SSA*: Out of the 39.4 million people in the world infected with the disease, about 25.4 million (64 percent) live in SSA. This compares with 7.1 million (18 percent) for South Asia, 1.7 million (4 percent) for Latin America and 1 million (3 percent) for East Asia (Table 1).
- *SSA has the highest infection rate among all the regions*: The adult infection rate for SSA is about 7 percent and less than 1 percent for other regions (Table 1). The infection rates for some countries are substantially high—— 33 percent for Swaziland, 24 percent for Botswana and 19 percent for South Africa (Table 3).
- *The death rate for AIDS patients is higher in SSA than other regions*: The share of AIDS patients who died in SSA in 2003 was about 9 percent. This compares with an average of about 6 percent for other developing countries (Table 1).
- *The number of children orphaned by AIDS is rising*: From 1990-2005, the number of children who lost a parent to AIDS increased from 0.33 million to 12 million, an

increase of about 3,500 percent (Table 1). It is estimated that by 2010, about 15.7 million children will have lost a parent due to AIDS (UNICEF, 2006). Also, the number of children orphaned by AIDS as a percentage of all orphans increased from 1 percent to about 25 percent (Table 2).

- *The HIV/AIDS epidemic is more severe in Southern Africa than other sub-regions in SSA*: The adult infection rate is about 19 percent for Southern Africa, 5 percent for Central Africa, 4 percent for East Africa and 2 percent for West Africa. Also, the number of children orphaned by aids as a percentage of all orphans is as high as 59 percent for Southern Africa, and 13 percent, 23 percent and 24 percent respectively for West, Central and East Africa. Finally, the reduction in life expectancy is about 39 years for Southern Africa. This compares with an average of about 6 years for the other sub-regions (Table 3).

3. The Mexico City Policy and HIV/AIDS

The Mexico City Policy (MCP) was first established by Ronald Reagan in 1984 and remained in effect through the end of the first Bush Administration in January, 1993. The policy was revoked during the Clinton Administration (1993 – 2000) and subsequently reinstated in the second Bush Administration in January, 2001. The Mexico City Policy places restrictions on family planning funds distributed by US Agency for International Development (USAID) to foreign non-governmental organizations. It contains the following restrictions on family planning activities. First, family planning funds and assistance (supplies) are withheld from foreign NGOs that use non-US funds to perform abortions. Second, the policy forbids foreign NGOs from lobbying for abortion rights. Third, the policy prohibits family planning counselors

from discussing abortion as a family planning option (USAID 2001). If a foreign NGO does not agree to the terms of the MCP, USAID family planning funds and assistance were terminated.

Given that the MCP refers to abortion and not directly to family planning and HIV/AIDS prevention, one could easily argue that the policy would have a limited impact on AIDS rates in SSA. Furthermore, the US contribution to total family-planning expenditures in SSA may not be large enough to have a significant impact on family planning outcomes. Family planning organizations have stressed that family planning services and HIV prevention are inextricably linked (Planned Parenthood 2003). To the extent that the MCP limited effective family planning counseling in countries that received USAID family planning funds (through the reduction of funding or contraceptive supplies), the policy could have contributed to the AIDS crisis. In addition, the US is the single largest donor to international population assistance (Cincotta and Crane 2001). Thus, the MCP could potentially affect HIV/AIDS rates in countries receiving USAID family planning services.

There is very limited anecdotal evidence and no statistical evidence that we are aware of on the impact of the MCP. The MCP affected those NGOs that refused to abide by its restrictions. During the first incarnation of the MCP, the International Planned Parenthood Federation, a major supplier of family planning services in SSA, experienced a 25 percent budget cut because it refused to comply with the MCP (http://populationaction.org/resources/publications/globalgagrule/GagRuleTimeline.htm). After losing in the Supreme Court, Planned Parenthood Federation of America terminated its agreement with USAID in 1989 (Planned Parenthood 2003).

Anecdotal evidence since the 2001 reinstatement of the MCP suggests that the policy has a negative effect on the provision of family planning and HIV/AIDS prevention services.

Several family planning organizations lost funding as a result of the MCP reinstatement. In particular, the IPPF cut grants to affiliates by up to 22 percent in 2002 (IPPF/WHR 2001). Family planning clinics in Congo, Kenya, Ghana, Zambia, Ethiopia, and Zimbabwe either closed or reduced services as a result of the reinstatement of the MCP (Planned Parenthood 2003). Affiliates of IPPF in SSA have lost access to USAID contraceptive supplies (http://www.globalgagrule.org/pdfs/issue_factsheets/GGR_fact_contraceptive.pdf). Although these reductions in family planning services related to the current MCP, to the extent that similar events occurred between 1984 – 1993, the MCP may have had an impact on HIV/AIDS rates in countries receiving USAID family planning funds.

4. Data and Estimation Methods

Our empirical analysis employs data for 46 countries in SSA over the period 1970-2001. Data on SSA countries economic conditions are obtained from the *World Development Indicators* 2005. Information on AIDS rates come from UNAIDS/WHO Epidemiological Fact Sheets (2006) which report the number of AIDS cases for each country starting in 1985. The countries included in our analysis are listed in Table 4. Note that our analysis includes all the countries in SSA except for 2 countries — Cape Verde and Sao Tome, for which there is no data available. Twenty-two of the 44 SSA countries used in this analysis receive family planning assistance from USAID and have been affected by the MCP. This comprehensive approach enhances the credibility of our results.

4.1 Estimation Methods

The MCP constitutes a quasi-natural experiment where the family planning policy environment changed for those African countries receiving USAID family planning funds. To identify the causal effect of the MCP on HIV/AIDS rates, we estimate a difference-in-differences model on our panel of African countries:

$$AIDS_{it} = \alpha + \phi_i + \delta_t + \beta USAID * MCP_{i(t-1)} + \delta_t * USAID_i + e_{it} \quad (1)$$

where $AIDS_{it}$ is the natural log of the number of AIDS cases reported per 100,000 population in country *i* in year *t*;[3] ϕ_i is a country fixed-effect; δ_t is a time trend, $MCP_{i(t-1)}$ is a dummy variable that takes on value 1 during the Reagan-Bush era (i.e., when the Mexico City policy was in effect, the period 1984-1992,), and zero otherwise. This variable is lagged at least one period in the analysis to reflect the fact that HIV takes a substantial amount of time before manifesting as AIDS; $USAID_i$ is a dummy variable that takes on value 1 if country *i* received funding from USAID for family planning and zero otherwise; and ε_{it} is the error term. Here, the treatment group is the countries that received USAID funding and the control group is the countries that did not receive any funding. This model is estimated using fixed-effects

Our main parameter of interest is $\hat{\beta}$, which is the difference-in-differences (DID) estimator. $\hat{\beta}$ reflects the average difference in AIDS rates in countries receiving USAID funding vis-à-vis the countries that did not receive such funding. An important advantage of the difference-in-differences specification is that it takes into consideration both group-specific effects (USAID-vis-vis non-USAID) and time-specific effect (captured by the MCP). We however note that the DID estimator is biased if the policy change is systematically correlated

[3] Kalemi-Ozcan (2006) employs a similar definition.

with other factors that affect AIDS rates (and are hidden in the error term, ε). In subsequent analysis we will experiment with various lag lengths as robustness checks.

5. Estimation Results

Table 5 shows the results for ordinary least square (OLS) with robust p-values. This is a version of the DID estimator that does not control for country fixed-effects. We consider two specifications: one where we include a time trend (Columns (1), (3) and (5)) and another where we allow the effect of USAID to vary by year by including the interaction term for the time trend and USAID, TimeTrend*USAID (Columns (2), (4) and (6)). The results for the full sample are reported in Columns (1) and (2). To ensure that our results are not being driven by outliers, we carried out two robustness checks. Specifically, we note that it is possible that our results are driven by a few countries that received substantial amounts of family planning funds from USAID. Indeed, seven of the countries in our sample, namely, Ethiopia, Ghana, Kenya, Mozambique, Nigeria, Uganda and Zambia are included in the top 16 countries that received USAID funds. Columns (3) and (4) show the estimation results where we exclude these countries. The second sensitivity test was to drop five countries in our sample that had high incidences of HIV/AIDS, i.e., Botswana, Lesotho, Namibia, South Africa and Swaziland.

Four points stand out from Table 5. First, the estimated coefficients of the time trend is significant at the 1 percent level and positive in all the regressions, suggesting that on the average, the AIDS rate is increasing over time. Second, the estimated value of β is significant at least at the 5 percent levels and positive in all the regressions, implying that there is a positive causality between US family planning policies and AIDS rates. For example, for the regressions for the full sample reported in column (1), $\hat{\beta}$ is equal to 0.767, suggesting that on the average,

HIV rates were 7.67 percent higher for countries that received U.S. family planning than for countries that did not. The fourth noticeable point is that the estimated coefficient of the BushReagan dummy variable, $\hat{\gamma}$, is also significant at the 1 percent level and positive and in all the regressions. This suggests that U.S. policies enacted during the Bush-Reagan era (which includes the Mexico City Policy) increased AIDS rates in countries that received US family planning funds.

Tables 6 reports the DID estimators after controlling for country fixed-effects. These results suggest that the MCP had a significant and large impact on HIV/AIDS rates in affected countries. For example, in the full sample after controlling for differences in time trends, the MCP increased HIV/AIDS rates 1.4 times faster in countries receiving USAID funding during the MCP relative to countries that did not receive funding. This result is significant at the 1 percent level even after controlling for country fixed-effects. Excluding countries who receive the most money USAID funding (columns 3 and 4) and countries that do not have the highest AIDS rates (columns 5 and 6) does little to change the results.

6. Conclusion

Taken together, the preliminary results in Tables 5 and 6 suggest that the MCP significantly increased HIV/AIDS infection rates in SSA. We plan to conduct a number of robustness checks including adding covariates to the DID estimates, experimenting with lags of the MCP, and adding additional data on HIV prevalence.

References

Bloom, David E., David Canning and Bryan Graham. 2003. "Longevity and Life Cycle Savings," Scandinavian Journal of Economics, 105:3, 319-38.

Blumenthal, Gisela. 2005. Transnational Health Threats. In Olli Ruohomaki (Ed.), Development in an Insecure World, (pp. 143-151). Ministry of Foreign Affairs, Finland.

Canning, David. 2006. "The Economics of HIV/AIDS in Low-Income Countries: The Case for Prevention," Journal of Economic Perspectives. 20:3, 121-142.

Jones, Allegra A. 2004. "The "Mexico City Policy" and its Effects on HIV/AIDS Services in Sub- Saharan Africa," Boston College Third World Law Journal, Healing the Wounds of Slavery: Can Present Legal Remedies Cure past Wrongs?

Kalemi-Ozcan. 2006. "AIDS, Reversal of the Demographic Transition and Economic Development: Evidence from Africa," NBER Working Paper, 12181.

Kalemli-Ozcan, Sebmen, Harl Ryder and David N. Weil. 2000. "Mortality Decline, Human Capital Investment, and Economic Growth," Journal of Development Economics. 62:1, 1-23.

Savedoff, William D. and T. Paul Schultz. 2000. Wealth from Health: Linking Social Investments to Earnings in Latin America. Washington, D.C.: Inter-American development Bank.

UNAIDS, various years. http://www.unaids.org/en/.

UNICEF, 2006. “ Africa’s Orphaned and Vulnerable Generations: Children Affected by AIDS,”, mimeo.

Table 1. HIV/AIDS by Region, 2004

Region	Adults & Children Living with HIV/AIDS*	Adults & Children Newly Infected*	Adult Infection Rate (%)	Deaths of Adults & Children*	% of Infected People who died
Sub-Saharan Africa	25,400,000	3,100,000	7.4	2,300,000	9.1
East Asia	1,000,000	290,000	0.1	51,000	5.1
South Asia	7,100,000	890,000	0.6	490,000	6.9
Eastern Europe & Central Asia	1,400,000	210,000	0.8	60,000	4.3
Western & Central Europe	610,000	21,000	0.3	6,500	1.1
North Africa & Middle East	540,000	92,000	0.3	28,000	5.2
Latin America	1,700,000	240,000	0.6	95,000	5.6
Global Total	39,400,000	4,900,000	1.1	3,100,000	7.9

Source: Report on the Global AIDS Epidemic, 2004, published by UNAIDS/WHO.

Table 2: Impact on Aids on Orphanage for Children, 1990-2010

Year	Population aged 0-17	Total number of orphans	Total number of orphans due to AIDS	Children orphaned by AIDS as % of all orphans
1990	271, 600,000	30,900,000	330,000	1
1995	309,900,000	35,000,000	2,300,000	7
2000	348,500,000	41,500,000	7,000,000	17
2005	387,100,000	48,300,000	12,000,000	25
2010	427,000,000	53,100,000	15,700,000	30

Source: Africa's Orphaned and Vulnerable Generations: Children Affected by AIDS, 2006, report published by UNICEF.

Table 3. HIV/AIDS Estimates, 2005

Countries	Number of orphans due to AIDS	Children orphaned by AIDS as % of all orphans	Adult prevalence rate (%)	Adults (15+ years)	Children (0-14 years)	AIDS deaths 2005	Life expectancy at birth (years)	Reduction in life expectancy
WEST AFRICA								
Benin	62,000	17	1.8	77,000	9,800	9,600	54	3
Burkina Faso	120,000	16	2.0	140,000	17,000	12,000	48	8
Cote d'Ivoire	450,000	33	7.1	680,000	74,000	65,000	46	8
Gambia	4,000	6	2.4	19,000	1,200	1,300	56	1
Ghana	170,000	17	2.3	300,000	25,000	29,000	57	4
Guinea	28,000	7	1.5	78,000	7,000	7,100	54	3
Guinea-Bissau	11,000	10	3.8	29,000	3,200	2,700	45	3
Mali	94,000	13	1.7	110,000	16,000	11,000	48	2
Mauritania	7,000	4	0.7	11,000	1,100	1,000	53	
Niger	46,000	6	1.1	71,000	8,900	7,600	45	0
Nigeria	930,000	11	3.9	2,600,000	240,000	220,000	43	6
Senegal	25,000	4	0.9	56,000	5,000	5,200	56	
Sierra Leone	31,000	9	1.6	43,000	5,200	4,600	41	2
Togo	88,000	31	3.2	100,000	9,700	9,100	55	6
Average	**147,571**	**13**	**2**	**308,143**	**30,221**	**27,514**	**50**	**4**
CENTRAL AFRICA								
Cameroon	240,000	24	5.4	470,000	43,000	46,000	46	8
Central African Rep.	140,000	41	10.7	230,000	24,000	24,000	39	14
Chad	57,000	10	3.5	160,000	16,000	11,000	44	5
Congo	110,000	39	5.3	100,000	15,000	11,000	52	8
Congo, Dem Rep.	680,000	16	3.2	890,000	120,000	90,000	44	4
Equatorial Guinea	5,000	16	3.2	8,000	1,000	1,000	43	9
Gabon	20,000	31	7.9	56,000	3,900	4,700	54	9
Sudan	140,000	8	1.6	320,000	30,000	34,000	57	2
Average	**174,000**	**23**	**5**	**279,250**	**31,613**	**27,713**	**47**	**7**
EAST AFRICA								
Burundi	120,000	21	3.3	130,000	20,000	13,000	44	7
Djibouti	6,000	12	3.1	14,000	1,200	1,200	53	3
Eritrea	36,000	13	2.4	53,000	6,600	5,600	54	4
Kenya	1,100,000	46	6.1	1,200,000	150,000	140,000	48	13
Madagascar	13,000	1	0.5	47,000	1,600	2,900	56	1
Rwanda	210,000	26	3.1	160,000	27,000	21,000	44	5
Somalia	23,000	4	0.9	40,000	4,500	4,100	47	
Tanzania	1,100,000	44	6.5	1,300,000	110,000	140,000	46	12
Uganda	1,000,000	45	6.7	900,000	110,000	91,000	48	9
Average	**400,889**	**24**	**4**	**427,111**	**47,878**	**46,533**	**49**	**7**

Table 3 continued. HIV/AIDS Estimates, 2005

Countries	Number of orphans due to AIDS	Children orphaned by AIDS as % of all orphans	Adult prevalence rate (%)	Adults (15+ years)	Children (0-14 years)	AIDS deaths 2005	% of AIDS patients who died 2005	Life expectancy at birth (years)	Reduction in life expectancy
SOUTHERN AFRICA									
Angola	160,000	13	3.7	280,000	35,000	30,000	10	41	3
Botswana	120,000	76	24.1	260,000	14,000	18,000	7	35	34
Lesotho	97,000	64	23.2	250,000	18,000	23,000	9	35	29
Malawi	550,000	57	14.1	850,000	91,000	78,000	8	40	17
Mozambique	510,000	34	16.1	1,600,000	140,000	140,000	8	42	11
Namibia	85,000	62	19.6	210,000	17,000	17,000	7	47	21
South Africa	1,200,000	49	18.8	5,300,000	240,000	320,000	6	47	20
Swaziland	63,000	66	33.4	210,000	15,000	16,000	7	31	33
Zambia	710,000	57	17.0	1,000,000	130,000	98,000	9	38	16
Zimbabwe	1,100,000	77	20.1	1,500,000	160,000	180,000	11	37	27
Average	**459,500**	**56**	**19**	**1,146,000**	**86,000**	**92,000**	**7**	**39**	**21**

Source: Africa's Orphaned and Vulnerable Generations: Children Affected by AIDS, 2006, report published by UNICEF.

Table 4. List of Countries Included in the Sample

Recipients of USAID Family Planning Funds, 1980-2001	Non-Recipients of USAID Family Planning Funds, 1980-2001
Angola	Botswana**
Benin	Burkina Faso
Congo, Dem. Rep.	Burundi
Eritrea	Cameroon
Ethiopia*	Central African Republic
Ghana[a]	Chad
Guinea	Comoros
Kenya*	Congo
Liberia	Côte d'Ivoire
Madagascar	Djibouti
Malawi	Equatorial Guinea
Mali	Gabon
Mozambique*	Gambia
Nigeria*	Guinea-Bissau
Rwanda	Lesotho**
Senegal	Mauritania
South Africa**	Mauritius
Sudan	Namibia**
Uganda*	Niger
Tanzania	Seychelles
Zambia	Sierra Leone
Zimbabwe	Somalia
	Swaziland**
	Togo

* Implies a country is one of the top 16 recipients of USAID family planning fund.
** Refers to countries with high HIV/AIDS infection rates.

Table 5. Ordinary Least Squares Estimations.

Dependent Variable: ln (HIV/AIDS cases per 100,000 population).

Variable	Full Sample		Exclude Countries that have received substantial amounts of USAID funds		Exclude Countries with high HIV/AIDS infection rates	
	(1)	(2)	(3)	(4)	(5)	(6)
Lag(MCP); a dummy variable which equals=1 for 1984-1992	0.767*** (0.000)	0.822*** (0.000)	0.764*** (0.000)	0.822*** (0.000)	0.955*** (0.000)	0.985*** (0.000)
USAID= 1 if country received family planning funds from USAID	-0.408*** (0.009)	0.973*** (0.004)	-0.551*** (0.002)	1.146*** (0.002)	-0.179 (0.271)	0.579 (0.101)
USAID*Lag(MCP)	0.786*** (0.005)	0.691** (0.011)	0.731** (0.019)	0.635** (0.035)	0.638** (0.035)	0.586** (0.045)
Time Trend	0.437*** (0.000)	0.471*** (0.000)	0.435*** (0.000)	0.471*** (0.000)	0.422*** (0.000)	0.442*** (0.000)
USAID*Time Trend		-0.064*** (0.001)		-0.079*** (0.000)		-0.035* (0.070)
Constant	-5.072*** (0.000)	-5.811*** (0.000)	-5.032*** (0.000)	-5.811*** (0.000)	-4.999*** (0.000)	-5.426*** (0.000)
Number of Observations	851	851	721	721	769	769
Number of Countries	46	46	39	39	41	41
R-squared	0.646	0.649	0.645	0.650	0.625	0.626

Robust p values in parentheses . * significant at 10%; ** significant at 5%; *** significant at 1%.

Table 6. Fixed-Effects Difference-in-Differences Estimations

Dependent Variable: ln (HIV/AIDS cases per 100,000 population).

Variable	Full Sample		Exclude Countries that have received substantial amounts of USAID funds		Exclude Countries with high HIV/AIDS infection rates	
	(1)	(2)	(3)	(4)	(5)	(6)
USAID*Lag(MCP)	1.441*** (0.000)	1.429*** (0.000)	1.342*** (0.000)	1.326*** (0.000)	1.481*** (0.000)	1.485*** (0.000)
Time Trend	0.436*** (0.000)	0.447*** (0.000)	0.427*** (0.000)	0.447*** (0.000)	0.427*** (0.000)	0.424*** (0.000)
USAID*Time Trend		-0.019 (0.293)		-0.042** (0.031)		0.005 (0.778)
Constant	-5.077*** (0.000)	-5.090*** (0.000)	-4.869*** (0.000)	-4.916*** (0.000)	-4.968*** (0.000)	-4.965*** (0.000)
Number of Observations	851	851	721	721	769	769
Number of Countries	46	46	39	39	41	41
R-squared	0.750	0.751	0.745	0.747	0.735	0.735

Robust p values in parentheses . * significant at 10%; ** significant at 5%; *** significant at 1%.