



The POLICY Project

The Economic Impact of AIDS in Botswana

by
Lori Bollinger
John Stover

September 1999

The Futures Group International
in collaboration with:
Research Triangle Institute (RTI)
The Centre for Development and Population
Activities (CEDPA)

POLICY is a five-year project funded by the U.S. Agency for International Development under Contract No. CCP-C-00-95-00023-04, beginning September 1, 1995. The project is implemented by The Futures Group International in collaboration with Research Triangle Institute (RTI) and The Centre for Development and Population Activities (CEDPA).

AIDS has the potential to create severe economic impacts in many African countries. It is different from most other diseases because it strikes people in the most productive age groups and is essentially 100 percent fatal. The effects will vary according to the severity of the AIDS epidemic and the structure of the national economies. The two major economic effects are a reduction in the labor supply and increased costs:

Labor Supply

- The loss of young adults in their most productive years will affect overall economic output
- If AIDS is more prevalent among the economic elite, then the impact may be much larger than the absolute number of AIDS deaths indicates

Costs

- The direct costs of AIDS include expenditures for medical care, drugs, and funeral expenses
- Indirect costs include lost time due to illness, recruitment and training costs to replace workers, and care of orphans
- If costs are financed out of savings, then the reduction in investment could lead to a significant reduction in economic growth

LABOR FORCE STATISTICS				
Sector	Economically Active Labor Force: 1991¹		Employment by Industry: 1986²	
	'000s	%	'000s	%
AGRICULTURE				
Agriculture, hunting, forestry and fishing	97.6	25.69	6.0	2.64
INDUSTRY				
Mining and quarrying industries	13.3	3.50	7.7	3.38
Manufacturing industries	27.5	7.24	25.6	11.25
SERVICES				
Electricity, gas and water	6.4	1.68	2.6	1.14
Construction	58.0	15.27	33.7	14.81
Trade, restaurants and hotels	35.2	9.27	40.9	17.98
Transport, storage and communications	11.5	3.03	10.2	4.48
Finance, insurance, real estate and business services	13.4	3.53	17.6	7.74
Community, social and personal services	106.7	28.09	83.2	36.57
TOTAL	379.9	100.0	227.5	100.0
Source: 1 – Europa World Year Book, 1999; 2 - United Nations, Statistical Yearbook, 1995, table 29				

The economy of Botswana relies upon the mining industry for approximately 33% of its GDP, while agriculture, manufacturing, and construction each are responsible for 4%-5% of the GDP. Diamond mining accounts for the majority of the mining sector. Botswana had an economic growth rate averaging 7.3% between 1970 and 1995, and currently the per capita GNP is US\$3,260. Thus

Botswana is one of the few African countries considered to be a lower middle-income country and to have avoided the recent economic recessions currently affecting many of the countries in the region.¹ The accompanying table shows the labor force structure by industry.

The economic effects of AIDS will be felt first by individuals and their families, then ripple outwards to firms and businesses and the macro-economy. This paper will consider each of these levels in turn and provide examples from Botswana to illustrate these impacts.

Economic Impact of AIDS on Households

The household impacts begin as soon as a member of the household starts to suffer from HIV-related illnesses:

- Loss of income of the patient (who is frequently the main breadwinner)
 - Household expenditures for medical expenses may increase substantially
 - Other members of the household, usually daughters and wives, may miss school or work less in order to care for the sick person
 - Death results in: a permanent loss of income, from less labor on the farm or from lower remittances; funeral and mourning costs; and the removal of children from school in order to save on educational expenses and increase household labor, resulting in a severe loss of future earning potential.
-
- Because about half of Botswana's households are headed by females, when a mother dies, the children become orphans.² By the end of 1992, one study found that 95 percent of orphans in Botswana were cared for by extended family members, including those who were orphaned due to AIDS.³ It is not clear, however, that this coping pattern can continue, given the increased number of AIDS orphans.
 - The dependency ratio is projected to increase dramatically, as 48 percent of Botswana's population is under the age of 18, and most deaths from AIDS will occur in the sexually active age groups. "Severe hardship will be placed on individual households. [In addition to] the loss of direct income, the death of an adult represents a lost input to the household's productive activity. More and more households will be pushed below the poverty line."⁴

¹ The World Bank. <http://www.worldbank.org/html/extdr/offrep/afr/bw2.htm>. 6/10/99.

² Botswana AIDS Reporting Cable from U.S. Embassy, June 1996.

³ NACP Botswana. 1992. "Social Consequences of AIDS: A Study of the Impact on Children [NACP 11]. Gaborone: NACP; 1992.

⁴ Botswana AIDS Reporting Cable from U.S. Embassy, June 1996.

Economic Impact of AIDS on Agriculture

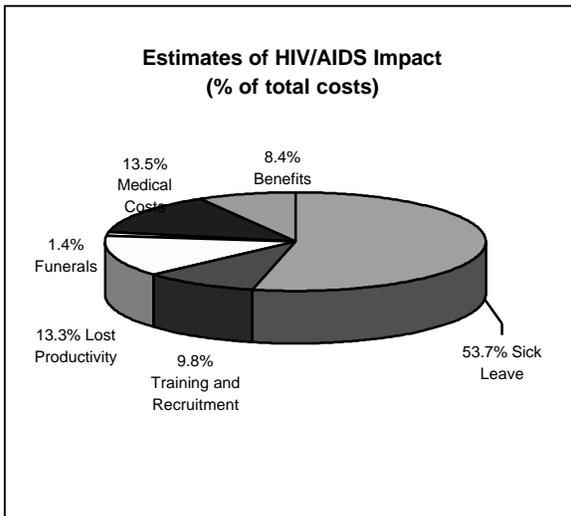
Agriculture is the largest sector in most African economies accounting for a large portion of production and a majority of employment. Studies done in Tanzania and other countries have shown that AIDS will have adverse effects on agriculture, including loss of labor supply and remittance income. The loss of a few workers at the crucial periods of planting and harvesting can significantly reduce the size of the harvest. In countries where food security has been a continuous issue because of drought, any declines in household production can have serious consequences. Additionally, a loss of agricultural labor is likely to cause farmers to switch to less-labor-intensive crops. In many cases this may mean switching from export crops to food crops. Thus, AIDS could affect the production of cash crops as well as food crops.

- In Botswana, many households rely on production from subsistence agriculture. The impact of HIV/AIDS will be felt severely in decreasing the labor supply and thus production for these households.⁵

Economic Impact of AIDS on Firms

AIDS may have a significant impact on some firms. AIDS-related illnesses and deaths to employees affect a firm by both increasing expenditures and reducing revenues. Expenditures are increased for health care costs, burial fees and training and recruitment of replacement employees. Revenues may be decreased because of absenteeism due to illness or attendance at funerals and time spent on training. Labor turnover can lead to a less experienced labor force that is less productive.

Factors Leading to Increased Expenditure	Factors Leading to Decreased Revenue
Health care costs	Absenteeism due to illness
Burial fees	Time off to attend funerals
Training and recruitment	Time spent on training
	Labor turnover



- A recent study of five firms in Botswana found that the impact of HIV/AIDS depended on the type of business, where the transport sector was most affected, and the financial sector the least affected; the skill level of employees; the types of benefits provided; and the amount of savings held. The total cost to all five firms was P148, 127, and was split into six different categories based on certain assumptions, as shown at the right.

⁵ Botswana AIDS Reporting Cable from U.S. Embassy, June 1996.

None of the five firms had intervention programs in place to deter further HIV infection. It is estimated that between 1996 and 2004, the impact of HIV/AIDS will increase 7 times to equal 4.9% of the wage bill.⁶

- An AIDSCAP study in two firms in Botswana found that the firms' prevention programs cost only a fraction of the annual cost of AIDS to the companies. The Botswana Diamond Valuing Company, in particular, finds the investment to be worthwhile, as it trains its workers formally for six months before beginning work, followed by extensive on-the-job training. The Botswana Meat Commission provides generous benefits to their employees, including free medical care, life insurance, and payment of burial expenses.⁷

Impact of HIV/AIDS on Firms		
Company name	Total Annual Cost of AIDS	Annual Cost of AIDS per Employee
Botswana Diamond Valuing Company	US\$125,941	US\$237
Botswana Meat Commission	US\$370,200	US\$268

For some smaller firms the loss of one or more key employees could be catastrophic, leading to the collapse of the firm. In others, the impact may be small. Firms in some key sectors, such as transportation and mining, are likely to suffer larger impacts than firms in other sectors. In poorly managed situations the HIV-related costs to companies can be high. However, with proactive management these costs can be mitigated through effective prevention and management strategies.

Impacts on Other Economic Sectors

AIDS will also have significant effects in other key sectors. Among them are health, transport, mining, education and water.

- **Health.** AIDS will affect the health sector for two reasons: (1) it will increase the number of people seeking services and (2) health care for AIDS patients is more expensive than for most other conditions. Governments will face trade-offs along at least three dimensions: treating AIDS versus preventing HIV infection; treating AIDS versus treating other illnesses; and spending for health versus spending for other objectives. Maintaining a healthy population is an important goal in its own right and is crucial to the development of a productive workforce essential for economic development.

⁶ Greener, Robert. "Impact of HIV/AIDS and Options for Intervention: Results of a Five Company Pilot Study Paper Written for the Botswana National Task Force on AIDS at the Workplace". BIDPA Working Paper #10. August, 1997.

⁷ Roberts, M and B Rau. (1997) "Private Sector AIDS Policy African Workplace Profiles: Case Studies on Business Managing HIV/AIDS." The AIDSCAP Electronic Library (Family Health International/The AIDS Control and Prevention Project, Durham, North Carolina).

- In Botswana, hospital bed occupancy by people with HIV/AIDS is approximately 60%, which has provoked the government to allocate \$6 million to strengthen their home-based care program.^{8,9}
- By 1999, if 35% of the estimated 13,000 AIDS patients are admitted to hospitals, it will cost \$4.3 million, and increase the occupancy rate of hospital beds to 111%¹⁰. By the year 2000, total expenditures by the public health system are projected to reach P34 million (US\$7.4 million).¹¹
- In 1996, a national home-based care system for AIDS patients was announced by the government, at a projected annual cost of US\$3 million, saving approximately US\$600,000 each year. The objective of this project was to reduce the pressure on the hospital system to care for AIDS patients.¹²
- **Transport.** The transport sector is especially vulnerable to AIDS and important to AIDS prevention. Building and maintaining transport infrastructure often involves sending teams of men away from their families for extended periods of time, increasing the likelihood of multiple sexual partners. The people who operate transport services (truck drivers, train crews, sailors) spend many days and nights away from their families. Most transport managers are highly trained professionals who are hard to replace if they die. Governments face the dilemma of improving transport as an essential element of national development while protecting the health of the workers and their families.
 - Unlike other countries, truckers are not responsible for the spread of HIV in Botswana. Initial cases were reported from all areas of the country; this reflects the mobility of this population, as well as their ties to rural homes.¹³
- **Mining.** The mining sector is a key source of foreign exchange for many countries. Most mining is conducted at sites far from population centers forcing workers to live apart from their families for extended periods of time. They often resort to commercial sex. Many become infected with HIV and spread that infection to their spouses and communities when they return home. Highly trained mining engineers can be very difficult to replace. As a result, a severe AIDS epidemic can seriously threaten mine production.
 - After diamonds were discovered in Botswana, literacy and training were encouraged; however, now, many of those infected with HIV are professionals

⁸ Makhema, M.J. "Health Care Costs for Patients with HIV/AIDS". Princess Marina Hospital, Gaborone, Botswana. www.hsph.harvard.edu/Organizations/hai/conferences/botswana/ab18.html

⁹ "Botswana/Women Cite Financial Pressure in Unprotected Sex". Inter Press Service via Fulfillment by NewsEdge Corp. May 13, 1999

¹⁰ Anonymous. "Botswana's Economists Plan for AIDS" *AIDS Analysis Africa*; 6(3):1. 1996 June.

¹¹ "HIV/AIDS Prevention in the Workplace: The Manager's Guide," Occupational Health Unit, Ministry of Health, Botswana, 1993.

¹² Botswana AIDS Reporting Cable from U.S. Embassy, June 1996.

¹³ Botswana AIDS Reporting Cable from U.S. Embassy, June 1996.

or skilled workers, which could have serious consequences for the mining industry¹⁴.

- **Education.** AIDS affects the education sector in at least three ways: the supply of experienced teachers will be reduced by AIDS-related illness and death; children may be kept out of school if they are needed at home to care for sick family members or to work in the fields; and children may drop out of school if their families can not afford school fees due to reduced household income as a result of an AIDS death. Another problem is that teenage children are especially susceptible to HIV infection. Therefore, the education system also faces a special challenge to educate students about AIDS and equip them to protect themselves.
- After evaluating the impact of AIDS on the education system, following the UNESCO framework, the government found that both the demand and supply of schooling will be affected. The demand will be affected as fewer children attend, due to the need for labor at home, as well as financial pressures that reduce resources for uniforms and school supplies. The supply of schooling will decrease due to the death of teachers, who are already in short supply.¹⁵
- **Water.** Developing water resources in arid areas and controlling excess water during rainy periods requires highly skilled water engineers and constant maintenance of wells, dams, embankments, etc. The loss of even a small number of highly trained engineers can place entire water systems and significant investment at risk. These engineers may be especially susceptible to HIV because of the need to spend many nights away from their families.

Macroeconomic Impact of AIDS

The macroeconomic impact of AIDS is difficult to assess. Most studies have found that estimates of the macroeconomic impacts are sensitive to assumptions about how AIDS affects savings and investment rates and whether AIDS affects the best-educated employees more than others. Few studies have been able to incorporate the impacts at the household and firm level in macroeconomic projections. Some studies have found that the impacts may be small, especially if there is a plentiful supply of excess labor and worker benefits are small.

There are several mechanisms by which AIDS affects macroeconomic performance.

- AIDS deaths lead directly to a reduction in the number of workers available. These deaths occur to workers in their most productive years. As younger, less experienced workers replace these experienced workers, worker productivity is reduced.

¹⁴ Thomas, Patricia. "The Quest for an AIDS Vaccine". HIV Prevention Strategies. Harvard AIDS Review. Winter, 1998.

¹⁵ Botswana AIDS Reporting Cable from U.S. Embassy, June 1996.

- A shortage of workers leads to higher wages, which leads to higher domestic production costs. Higher production costs lead to a loss of international competitiveness which can cause foreign exchange shortages.
- Lower government revenues and reduced private savings (because of greater health care expenditures and a loss of worker income) can cause a significant drop in savings and capital accumulation. This leads to slower employment creation in the formal sector, which is particularly capital intensive.
- Reduced worker productivity and investment leads to fewer jobs in the formal sector. As a result some workers will be pushed from high paying jobs in the formal sector to lower paying jobs in the informal sector.
- The overall impact of AIDS on the macro-economy is small at first but increases significantly over time.
- It is estimated that between 1998 and 2010, life expectancy in Botswana will decrease from 64 to 42 and the infant mortality rate will increase from 41/1000 to 65/1000, as a result of AIDS. “Poor homes are expected to get poorer due to loss of income from the sexual[ly] and economically active who continue to die”.¹⁶ The child mortality rate is expected to double by 2010, and the crude death rate is projected to be four times higher. Overall, the population will decline by 0.4%, compared to a projected growth of 1.9% without AIDS, and the productive population will be cut in half.¹⁷
- Preliminary results from a forthcoming study on the macroeconomic impact of HIV/AIDS in Botswana indicate that the impact will not be substantial. This is because labor-intensive economic sectors, such as agriculture and certain industrial sectors, do not contribute to GDP as much as the mining sector, which is not labor-intensive. There are, however, implications for income distribution and the impact on government budgets.¹⁸

What Can Be Done?

AIDS has the potential to cause severe deterioration in the economic conditions of many countries. However, this is not inevitable. There is much that can be done now to keep the epidemic from getting worse and to mitigate the negative effects. Among the responses that are necessary are:

¹⁶ Simukoko, C. “Social Impact and Response of the Community”. International Conference on AIDS. 1998;12:717 (abstract no. 34154).

¹⁷ Cohen, D. (1997) “Socio-Economic Causes and Consequences of the HIV Epidemic in Southern Africa: A Case Study of Namibia,” HIV and Development Programme Issues Paper #31, United Nations Development Programme, [Http://www.undp.org/hiv/issues/English/issue31.htm](http://www.undp.org/hiv/issues/English/issue31.htm).

¹⁸ Greener, R (1999) Personal communication, June 21, 1999.

- **Prevent new infections.** The most effective response will be to support programs to reduce the number of new infections in the future. After more than a decade of research and pilot programs, we now know how to prevent most new infections. An effective national response should include information, education and communications; voluntary counseling and testing; condom promotion and availability; expanded and improved services to prevent and treat sexually transmitted diseases; and efforts to protect human rights and reduce stigma and discrimination. Governments, NGOs and the commercial sector, working together in a multi-sectoral effort can make a difference. Workplace-based programs can prevent new infections among experienced workers.

 - An alternate service provider, pharmacies, was found to be quite effective in the treatment of STDs, in turn possibly contributing to the reduction of HIV infection in Francistown. These clients were reluctant to attend government-sponsored health clinics for STD treatment, because of possible stigma.¹⁹
- **Design major development projects appropriately.** Some major development activities may inadvertently facilitate the spread of HIV. Major construction projects often require large numbers of male workers to live apart from their families for extended periods of time, leading to increased opportunities for commercial sex. A World Bank-funded pipeline construction project in Cameroon was redesigned to avoid this problem by creating special villages where workers could live with their families. Special prevention programs can be put in place from the very beginning in projects such as mines or new ports where commercial sex might be expected to flourish.
- **Programs to address specific problems.** Special programs can mitigate the impact of AIDS by addressing some of the most severe problems. Reduced school fees can help children from poor families and AIDS orphans stay in school longer and avoid deterioration in the education level of the workforce. Tax benefits or other incentives for training can encourage firms to maintain worker productivity in spite of the loss of experienced workers.
- **Mitigate the effects of AIDS on poverty.** The impacts of AIDS on households can be reduced to some extent by publicly funded programs to address the most severe problems. Such programs have included home care for people with HIV/AIDS, support for the basic needs of the households coping with AIDS, foster care for AIDS orphans, food programs for children and support for educational expenses. Such programs can help families and particularly children survive some of the consequences of an adult AIDS death that occur when families are poor or become poor as a result of the costs of AIDS.

¹⁹ Motlhabane, PM and A Jegede (1997) “Alternative Services – Neglected Approach to STD Management in Botswana: The Francistown Case,”
www.hsph.harvard.edu/Organizations/hai/conferences/botswana/ab18.html

A strong political commitment to the fight against AIDS is crucial. Countries that have shown the most success, such as Uganda, Thailand and Senegal, all have strong support from the top political leaders. This support is critical for several reasons. First, it sets the stage for an open approach to AIDS that helps to reduce the stigma and discrimination that often hamper prevention efforts. Second, it facilitates a multi-sectoral approach by making it clear that the fight against AIDS is a national priority. Third, it signals to individuals and community organizations involved in the AIDS programs that their efforts are appreciated and valued. Finally, it ensures that the program will receive an appropriate share of national and international donor resources to fund important programs.

Perhaps the most important role for the government in the fight against AIDS is to ensure an open and supportive environment for effective programs. Governments need to make AIDS a national priority, not a problem to be avoided. By stimulating and supporting a broad multi-sectoral approach that includes all segments of society, governments can create the conditions in which prevention, care and mitigation programs can succeed and protect the country's future development prospects.