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IMPACT OF HIV/AIDS ON PRO-POOR ECONOMIC GROWTH

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HIV/AIDS: A BRIEF INTRODUCTION TO THE EPIDEMIC

In recent years, HIV/AIDS has emerged as one central variable impacting the patterns of economic growth and poverty reduction in African countries. As HIV/AIDS now spreads in Latin American and the Caribbean, Asia, and Eastern Europe, these concerns will become increasingly pertinent in those regions as well.

This paper starts with a brief description of the HIV/AIDS epidemic: its expansion to date and projections for the future. The unexpected size and speed of the epidemic, plus its multiple manifestations, have led to a rapidly expanding literature on the socio-economic impacts of HIV/AIDS. This paper will briefly point to the empirical studies and models of HIV/AIDS' impacts on the poor, then examine the macroeconomic and sectoral impacts of HIV/AIDS. The paper will conclude with specific recommendations for maintaining the access and ability of the poor to participate in economic growth activities in HIV/AIDS-affected settings. Illustrative empirical evidence of the economic impact of HIV/AIDS on households is provided in Annex A. A bibliography representing a cross section of the relevant literature makes up Annex. B.

Scale and Spread of HIV/AIDS

In the face of significant advances in global health over the last 20 years, HIV/AIDS has emerged as the leading cause of death in Sub-Saharan Africa. An estimated 42 million worldwide are infected with HIV (of whom 28.5 million are in Sub-Saharan Africa), and another 27 million are estimated to have already died of AIDS, a tally that rises by 3 million per year (UNAIDS, 2002). Seven Southern African countries (Botswana, Zimbabwe, Zambia, South Africa, Namibia, Swaziland, and Lesotho) have HIV-prevalence rates above 20 percent; however, nearly all African countries now have evidence of generalized epidemics emerging in the adult population. Recent estimates looking at the epidemic in high-density countries (such as India, China, Russia, Nigeria, and Ethiopia) estimate that by 2010 as many as 100 million people globally could be infected with HIV, in addition to a death toll that is likely to have passed 60 million (National Intelligence Council, 2002).

The expansion of HIV/AIDS beyond Africa is one of the most important stories of the new millennium. The greatest number of new HIV cases annually now appears in Asia, despite low overall prevalence rates. Asia is expected to overtake Africa in absolute number of HIV/AIDS cases by 2010. The fastest growth in HIV-prevalence rates is now in Russia and Ukraine, fueled primarily by intravenous drug use (UNAIDS, 2002).

HIV/AIDS joins a long list of other communicable and non-communicable diseases plaguing the developing world. According to the World Health Report 2002, "unsafe sex" was the second-greatest contributor to sickness, disability, and death in high-mortality developing countries in 2000, following childhood and maternal under-nutrition.¹ HIV/AIDS is

¹ This statistic uses the "disability adjusted life years," or DALY metric, which combines losses from premature death and losses of health life resulting from disability.

particularly threatening in that it is fueled by and exacerbates other diseases and health conditions. Sexually transmitted infections enhance HIV transmission, malnutrition speeds the onset of active AIDS and death, and malaria is particularly deadly to those with HIV/AIDS. HIV and tuberculosis are intricately linked, with AIDS fueling the spread of tuberculosis, which kills 30 percent of HIV-infected individuals in Africa and Asia (Flores, 2001).

Is HIV/AIDS a Unique Health Crisis?

Although most diseases undermine economic development and hurt the poor disproportionately, HIV/AIDS is uniquely damaging in terms of poverty and economic growth because of the combination of six factors:

- First, many diseases disproportionately strike the young, weak, or elderly, whereas HIV/AIDS is concentrated primarily among adults between 15 and 49 years of age, the cohort that is most productive economically, is parents the next generation, and maintains most institution in society. In high-prevalence countries, this leads to a hollowing out of the labor force for businesses, agriculture, civil service, and a host of institutions that support the economy, civil order (such as legislatures, judiciary, and police), and basic services (such as health and education). The International Labour Organization estimates that by 2020 the labor force in high-prevalence countries will be 10-22 percent smaller than without AIDS and 3-9 percent smaller in low-prevalence AIDS countries. (ILO, 2000). These losses also imply significant losses in knowledge, skills, and practices for households, communities, businesses, and sectors.
- Second, HIV's long dormant period (where individuals become symptomatic with AIDS 7-10 years after HIV infection) allows the disease to become deeply rooted in communities before it becomes a visible threat. This invisibility allowed HIV/AIDS to take Southern Africa by surprise, with rates leaping from 5 percent to over 20 percent in a few years.
- Third, HIV/AIDS is a long, slow, expensive disease. Using empirical estimates by Rugalema (1999), the symptomatic period of AIDS averages 18 months for a rural African, of which the last 6-12 months are spent bedridden. Each bout of HIV/AIDS-related illness during this period has a range of negative economic consequences for the family and leads a loss of productivity for the economic sectors in which the sick individual—and caregivers—participate. This prolonged crisis period leads to economic consequences for households and sectors that are unusually severe, as will be discussed in greater detail below.
- Fourth, the inability to deliver affordable and accessible treatment on a large scale makes HIV/AIDS uniquely difficult to respond to through public health interventions. Vaccine development programs are hindered by the structure of the virus and its remarkable ability to mutate over time and by region.

- Fifth, no other disease has created a generation of orphans, with yet-unknown social, economic, political, and cultural consequences. Currently, 13 million children in Sub-Saharan Africa under the age of 15 have lost a parent to AIDS. This number is projected to rise to over 25 million by 2010 (TvT Associates, 2002).
- Sixth, HIV/AIDS interacts in a particularly pernicious way with a scourge of many African countries—drought and famine. These conditions make it harder for everyone, but especially the poor, to survive economically and physically because people become weak for lack of food and to produce enough to survive now involves more work, when it is possible at all. An HIV/AIDS-afflicted community is already weakened and thus vulnerable to less-severe drought conditions than would normally have been the case. This synergy has been cited in the context of the current (mid-2003) severe food shortage afflicting 15 million people in Lesotho, Zimbabwe, Malawi, and Zambia.

Thus, it appears that HIV is positioned to continue to expand over time, extract productive capacity, and exact a wide range of social and economic costs for this and future generations.

POVERTY-INCREASING IMPACTS OF HIV/AIDS

HIV/AIDS did not begin as a disease of poverty. In the mid 1990s, HIV/AIDS was still described as the disease of “men, money, and mobility.” However, as AIDS has progressed and spread into the general population, it has increasingly taken root in poorer populations, particularly those who migrate in search of work, resort to transactional sex as an economic survival strategy, engage in illicit drug use, or are sexual partners of any of these people. In high-prevalence countries today, HIV/AIDS has no economic boundaries and affects rich and poor alike. However, as will be described below, its impacts are likely to be much more damaging for the poor and the near-poor, pushing them into, or more deeply into, poverty.

Challenges of Capturing the Impact of AIDS on Poverty

In trying to draw a picture of the poverty-related impacts of HIV/AIDS, one discovers many bits of information drawn primarily from small sample surveys, alongside predictive models based on a range of assumptions and methodologies. Each of these surveys and models provides an estimate of the nature and size of the poverty-related impacts of HIV/AIDS. In sum, however, this work leaves unresolved the true magnitude or causality of these relationships. However, from this body of work, a story emerges that is consistent with the available information and observation. This story is presented below, illustrated only sparingly by the available flood of data. Annex A provides additional empirical details from specific studies.

Process of Impoverishment

What is the process by which families become impoverished by HIV/AIDS? The most immediate impact on a family is the loss of labor, both of the person who falls ill and eventually dies and of the person who provides care during the period of sickness. This loss of labor steadily increases for the sick individual, until his or her labor (and skills and experience) is completely lost to the household. Decreases in caregiver labor can also be significant: surveys estimate that caregivers, most of whom are women, lose 30-60 percent of time spent on productive activities when caring for someone bedridden with AIDS.

Of course, loss of labor implies loss of income for the household. Agricultural households see declines of 50 percent in household income as a result of an HIV/AIDS illness or death. At the same time income falls, household medical expenses and ultimately funeral expenses go up dramatically. A UNAIDS model based on data from Côte d'Ivoire (UNAIDS, 2000) estimated a 60 percent reduction of household income coupled with a 400 percent increase in medical expenditures during the period of illness, leading to significant dissavings or to use of household assets.

Families respond to this long period of illness and loss of income through a range of coping strategies. Drawing down savings is the most obvious coping strategy. Other common strategies are pledges of future crops or labor, borrowing, removing children from school, and sale of household or productive assets. As described by Donahue (2001), coping strategies range from reversible (such as use of savings, which can be replaced; reduced food consumption; or pledging of labor in return for cash) to those that permanently increase the family's poverty level (such as sale of land or draught animals, or truncation of children's education). The poorest households are most likely to resort to non-reversible coping strategies simply because of a lack of other means to cope with the length and severity of the crisis, which means that the burden of AIDS is likely to fall most heavily on the poorest households.

Unfortunately, HIV/AIDS typically affects multiple individuals in the same household. For example, if a male head of household has HIV/AIDS, his spouse is likely to be HIV positive as well. Households with sufficient pre-AIDS resources may still be able to manage the second illness without becoming impoverished. However, for poor households already reduced in capacity from the first HIV/AIDS event, a second cycle such as that described above can lead to even more extreme coping strategies and ultimate impoverishment. Women, children, and elderly caregivers are the hardest hit by this cycle and must manage both caregiving and income-earning roles in a context of fewer physical assets and savings and lower social capital in the community. Many surviving children are further disadvantaged by being permanently removed from school in response to their parents' illness or death, thus reducing the ability of the next generation to climb out of poverty.

Needless to say, not only are these trends impoverishing families affected by HIV/AIDS but the reductions in household labor, assets, skills, and vision for the future all bode ill for the ability of these families to participate in the activities linking the poor to economic growth.

GROWTH-REDUCING IMPACTS OF HIV/AIDS

There is uniform agreement that HIV/AIDS reduces economic growth. The discussion to date has been based largely upon simulation models enhanced with limited empirical data. Early models of HIV/AIDS impact on GDP were developed in the 1990s. These models focused on the impact of HIV/AIDS on economic output, costs, market size, and private sector investment. Examples include the work of Cuddington (1993) and Kambou et al. (1992). The models predicted small annual changes in GDP growth, ranging from 0.8 percent to 1.4 percent per year. In some models, the HIV/AIDS impacts were dwarfed by other variables such as economic policies, even in countries with high-prevalence epidemics (Bloom and Mahal, 1997). In retrospect, these models are now considered fairly “stylized” because they captured only limited indirect and dynamic impacts of HIV/AIDS. In addition, they reflected expectations of continuing low-prevalence rates for HIV, figures that were nullified by the startling rise in HIV prevalence in Southern Africa in the late 1990s.

More recent models have been refined through nearly a decade of additional evidence of the impacts of HIV/AIDS, including growing evidence of sectoral impacts. These models have included more dynamic and indirect impacts, such as changing public sector priorities in the face of the AIDS crisis, drags on human and capital development over time, and significant changes in the composition of the labor force over time. In addition, the current models factored in more accurate HIV-prevalence rates for Southern Africa. All of this combined to raise the estimates of HIV impact on GDP significantly.

The ING Barings’ model of South Africa in 1999 was one of the first to incorporate dynamic effects of AIDS; however, it still dramatically underestimated the potential scale of the epidemic. Ultimately, the ING model predicted only 0.3-0.4 percent reductions in annual GDP growth rates but highlighted new concerns: the potential for a domestic savings squeeze and a deterrence effect on foreign investment because of AIDS. One year later, Arndt and Lewis’s model incorporated even more indirect and dynamic effects. Also focused on South Africa, it predicted that GDP growth rates would ultimately be 2.6 percent lower per year as a result of AIDS, leading to a 17 percent reduction in GDP (and 7 percent reduction in per capita GDP) over the next 10 years. Government studies in Botswana (cited by UNDP, 2000) predict that GDP will drop by 24-38 percent because of HIV/AIDS by 2021 (whereas per capita income is expected to drop 8-10 percent).

These expanded models have led analysts at the World Bank and Harvard University to suggest “thresholds” of economic impact based on HIV prevalence, where countries with 15 percent prevalence rates or higher will see GDP growth rates decline by at least 1 percent annually. Over time, this annual drag on the growth of GDP leads to numbers similar to those projected by Arndt and Lewis.

Less significant impacts on GDP are projected for countries with lower prevalence rates. Anand et al. (1999) estimated that HIV/AIDS costs India 1 percent of GDP per year as a result of lost productivity and the costs of treating secondary infections. Shelton et al. (2000) estimated that GDP in Jamaica, Trinidad, and Tobago would be as much as 4.2 percent lower over a 15-20 year period because of HIV/AIDS. Although the precision of these estimates

may be debated, these models remind policy makers that even low-prevalence countries benefit from slowing the spread of HIV.

The models include distributional projections as well. In Burkina Faso (with a prevalence rate of 6.4 percent), the UNDP estimates that the number of people living in poverty will increase from 45 percent to nearly 60 percent by 2010 because of AIDS (Bjorkman, 2001). In Botswana, the number of families living below the poverty line is expected to increase 8 percent over the next 10 years because of AIDS (Loewenson and Whiteside, 2001). Widening inequality in wealth is also projected: a cross-country study of Rwanda, Uganda, and Burkina Faso projects that the percentage of people living in extreme poverty in those countries will increase from 45 percent in 2000 to 65 percent in 2015 (UNAIDS, 2002). However, remembering the caveat above, the absolute value of these numbers is less important (and reliable) than the story they tell—that HIV/AIDS will worsen poverty overall and will worsen distribution of economic resources within high-prevalence countries.

What are the driving forces behind predictions of slowed GDP as result of AIDS? At the macroeconomic level, composition of the population (and labor force) is a key factor because HIV/AIDS erodes the primary production and consumption band of the population. The second set of driving forces are the private sector impacts of AIDS—reduced productivity, increased cost structures, reduced market size, and reduced national investment and savings patterns. The third set of variables reflects the reduced ability of the public sector to support economic growth because of both reduced revenues and diversion of revenues to respond to AIDS.

Some of the more immediate impacts of AIDS have been documented empirically, usually within the more concrete sectoral impact studies (discussed below). The dynamic and indirect effects are more likely to appear gradually in the future as the epidemic progresses. To date, there is little empirical evidence with regard to these dynamic and indirect factors, but they are increasingly the centerpiece of discussion:

- Lower Individual Savings as a Result of AIDS: According to the ING Barings' estimates of the macroeconomic impact of AIDS in South Africa, "a key factor likely to lower potential GDP growth after 2005 is the diversion of funds away from savings to pay for the costs of the illness" (ING Barings, 1999).
- Lower Public Sector Investments: The UNDP National Human Development Report 2000 for Botswana estimates that public revenues will be reduced by 20 percent because of the impacts of HIV/AIDS (Bjorkman, 2001) whereas resource requirements to respond to HIV/AIDS are increasing. In South Africa, ING Barings notes that if the public sector spends additional funds, rather than diverting existing public funds to fight AIDS, the public borrowing may begin to crowd out potential private investment as well.
- Reduced Investment in Capital: As worker productivity falls, equipment will increasingly be left idle or managed by less experienced workers. In such cases, increased investment in capital is unlikely, despite the expected labor-to-capital shift in a high morbidity and mortality environment. A more likely outcome, predicted by Haacker (2002), is not only

a failure to attract new capital but also the potential for capital flight at its earliest opportunity.

- **Less Experienced Workforce:** The workforce will become less experienced because of losses of experienced workers in all job categories (highly skilled, skilled, semi-skilled, and unskilled). Based on analysis of 15 countries (13 in Africa plus Thailand and Haiti), the ILO predicts that the aggregate formal sector workforce is expected to have an average of two years less experience by 2020 as a result of AIDS (ILO, 2000). Accepting that each year's drop in experience results in an aggregate decline of 1.5 percent of GDP (Ferreira and Pessoa, 2003),² this would translate into a 3 percent negative impact on GDP from this factor alone.

Models of the impact of AIDS are still emerging. New work examines AIDS-induced changes at the household and individual levels, modeling the possible long-term impacts of those changes as macroeconomic outcomes. Analysts point to the already-visible downward slide in the health and education levels of AIDS-affected households; this is documented in community-level studies but is not yet factored into the macroeconomic models. If these trends are national in scope, they suggest a downward trend in productivity of the general population. This trend is likely to be even larger for the next generation, a significant number of whom will have reduced basic education, life skills, health, and social mentoring because of AIDS. In high-prevalence countries, this cohort may make up to 30 percent of the next generation's workforce.

Also of emerging concern is a possible change in behavior and investment patterns of individuals and households. Will people purposefully invest less in themselves if they feel that HIV/AIDS will make that investment useless? In the face of a 6.5-year decline in life expectancy in the 35 most-affected countries, Ferreira and Pessoa (2003) developed a model to explore whether a population facing a shortened life will continue to invest in its own skills and experience and to save and invest in productive activities. Their model predicts that likely changes in individuals' education and savings decisions alone will result in per capita income declines of 25 percent over time. McPherson (2003) also voices concerns that the current models remain too optimistic, failing to capture the future impact of HIV/AIDS on the disintegration of a wide range of institutions; declining social capital; and incentives toward widespread disinvestments in human, physical, and other assets.

In sum, HIV/AIDS is likely to exert a negative impact on GDP for countries that have reached a certain level of prevalence. For countries with over 15 percent prevalence rates, aggregate GDP can be expected to decline by 10 percent or more, depending on how quickly the epidemic is brought under control. What is more, the emerging consensus is that the impacts of AIDS on GDP will grow stronger in the future as a result of the indirect and dynamic impacts of the epidemic on economic growth and because of the still-growing scale of the epidemic.

² Ferreira and Pessoa report that the average gain in GDP in the United States from one more year of experience in the workforce is 1.5 percent, which "is in line with similar specifications from Haacker (2002) and with estimated rates of return in Africa's manufacturing sector in Bigsten (2000)."

SECTORAL IMPACTS OF HIV/AIDS

Although the macroeconomic and household-level impacts of HIV/AIDS are terrible, the impact of HIV/AIDS is most visible when looking at particular sectors, where illness and death can have a measurable impact on institutions, businesses, activities, and outcomes.

HIV/AIDS strikes certain sectors harder than others, particularly those that use migrant labor (such as mining, transport, construction, and agriculture). Certain sectors within the civil service and professions also have greater exposure: teachers, health care professionals, military, and police tend to have rates higher than the average population and tend to have a more skill-intensive workforce than activities heavily dependent on migrant labor. In each sector, loss of key skilled workers can cause major disruptions that take years to remedy. The loss of highly-skilled water engineers in Malawi is one such example (Topouzis, 1998).

The literature on the impact of HIV/AIDS on each of these sectors is growing rapidly. Below is a brief summary of the impact of HIV/AIDS on four sectors that play a significant role in pro-poor economic growth: agriculture, education, health, and the formal private sector.

Agriculture

One of the most disturbing and well-documented findings on rural households affected by HIV/AIDS is their transition out of small-scale commercial agriculture, which is replaced by subsistence agriculture. Early data from Zimbabwe drew attention to the potential magnitude of agricultural impacts, where an AIDS death led to a 61 percent decline in maize output, 49 percent decline in vegetable output, and 47 percent decline in cotton output (UNAIDS, 2000). Why does this reduction take place? When a male head of household is ill, his agricultural tasks are left to others or halted. In addition, the caregiver's agricultural contributions fall dramatically. In Tanzania, for example, Rugalema (1998) found that women caregivers spent 60 percent less time on agricultural activities. After the death of a male household head, the surviving spouse has increased difficulties with tasks traditionally carried out by the man: marketing, managing the farm schedule, and maintaining crop storage facilities are a few of the areas where there is a documented decline in effort (CARE/Malawi, 2002). These changes can have dramatic effects on the household's agricultural income. In Kenya, for example, the death of a rural household head was associated with a 68 percent decline in the household income (Leighton, 1996).

In general, the agricultural decisions of caregivers and those who survive the family's HIV/AIDS crisis involve moving toward labor-saving agricultural practices. Increasing amounts of land may lie fallow (with more distant fields most likely to be least tended; preparation of new agricultural land slows or stops, and the family shifts to low-labor (and typically lower-nutrition) subsistence crops, such as cassava. As Malcolm McPherson (Barks-Ruggles et al., 2001) says, the impact of AIDS (on the agricultural sector in this case) is akin to running Adam Smith in reverse.

As households reduce agricultural activities through these different coping strategies, many AIDS-affected households are in serious danger of becoming food insecure. This food insecurity may result from declining nutritional status of the household's food production, declining amounts of food grown for home consumption, or decreased ability to purchase adequate food. This pattern is already being played out in Southern Africa, where HIV-prevalence rates are highest and are combined with unfavorable weather patterns.

Monitoring the impacts of HIV/AIDS within the context of agricultural production is difficult, particularly because those most affected tend to disappear from the sector (by exiting commercial activities, through death, or through family dissolution). Therefore, to assess the magnitude of changes in agricultural activities from a programmatic perspective, special efforts must be made to track changes in aggregate output or land use patterns (including changes in crop volumes, land left fallow, and changing crop patterns). If food security is a major concern, a program may want to track household food stocks to identify newly vulnerable households.

Education

Education is central to the ability of the poor to participate in economic growth activities (as articulated in the sector study, "Deliverable 11: Educational Sector Study: Pro-Poor Economic Growth Effects of Policies and Activities," by Jere Bermann). Education of women is highly correlated with an increase in the family's overall physical and economic well-being, which enhances their productive capacity. In Asia, educational growth has been shown to be a central component of the strategy that led to more equitable patterns of pro-poor economic growth.

Education is a sector where HIV/AIDS impact is most visible not only because of teacher losses but also because the dropout of children affected by AIDS. Teacher losses are so large in high-prevalence HIV/AIDS countries that teaching colleges are unable to train sufficient numbers of replacement teachers. UNICEF estimated that, in 1999 alone, 860,000 students across Africa lost teachers to AIDS. In Zambia, teachers have HIV infection rates 70 percent higher than the general population (World Bank, 2001). In South Africa, teacher death rates have risen 40 percent (UNAIDS, 2002).

The ability of children to stay in school is heavily affected by AIDS. A study of the Central African Republic and Swaziland reports school enrollments have declined 20-36 percent because of AIDS-orphan dropouts. A study of orphaned and non-orphaned children in Kenya found that, although 98 percent of non-orphaned children were in school, 47 percent of orphaned boys and 56 percent of orphaned girls had dropped out within a year of a parent's death (UNAIDS, 2002). These trends have significant implications for the future ability of these children to participate in economic activities. In response, several African governments have lifted school fee requirements for primary school, resulting in a large-scale return of orphans to the classroom.

Health

Like education, a certain level of health is a critical precondition for the participation of the poor in economic activities and in their ultimate productivity (as spelled out in “Deliverable 18: Health Issues” by James Knowles). As Knowles notes, HIV/AIDS is now the number one cause not only of death but also of years lived with disabilities for adults 15-49 years of age in Africa. This is the health care burden of HIV/AIDS to the health system of the estimated 25.8 million adults now living with HIV/AIDS. This represents an increase in health care demand is from a group normally among the most healthy in Africa—young, productive adults. As a result, the impact on the health care system is immense, adding a new, growing, and very sick cohort to the load traditionally borne by the health sector.

The impact of HIV/AIDS on the health sector is immense. By 1995, HIV/AIDS-related care accounted for 27 percent of the public health budget in Zimbabwe, and 66 percent in Rwanda (Whiteside, 2002). Looking forward, Ministry of Health allocations to HIV/AIDS treatment may rise as high as 30 percent in Ethiopia by 2014, 50 percent in Kenya by 2005, and 60 percent in Zimbabwe by 2005 (Stover and Bollinger, 1999). The World Bank estimates that 100 percent of hospital beds will be needed to respond to the AIDS-related demand in Swaziland by 2004 and in Namibia by 2005 (two countries with HIV-prevalence rates above 20 percent), despite a trend that individuals with advanced AIDS are increasingly treated at home (UNAIDS, 2002). These sorts of dire statistics not only point to the public costs of HIV/AIDS but also to the diversion of health sector resources from other major health concerns such as maternal and child health and malaria.

The second form of impact on the health sector, as in education, is on the professional cadre of health care workers. For example, Malawi and Zambia—two high-prevalence countries—are experiencing five- to six-fold increases in health worker illness and death (predominantly because of sexual behavior rather than occupational risk). South Africa projects that a 25-40 percent increase in training of doctors and nurses by 2010 is required to meet projected medical needs in Southern Africa (UNAIDS, 2002). In addition, absenteeism, and the relative inexperience of new health care workers undermine the ability of the system to deliver services.

Formal Private Sector

The literature on the impact of HIV/AIDS on private business is voluminous. Overall, the impacts of HIV/AIDS on the private sector can be grouped in terms of productivity and profitability.

The loss of skilled, experienced workers is a major business concern. Although senior managers and those in the “critical path” of a company are the most expensive to replace, even semi-skilled and unskilled workers can cause major disruptions in production, idling of capital, and overall declines in output. The Center for International Health at Boston University’s School of Public Health studied six companies in different sectors and countries (in the ARCH program). It found that each new HIV infection created a liability to the

company ranging from 1.3 percent to 4 percent of the worker's annual salary, depending on the structure and operations of the company. These costs varied based upon the company's medical, retirement, death, and disability benefits; recruitment and training investments; labor productivity (where capital-intensive industries are hit harder); ability to outsource unskilled tasks; and discount rate.

Those sectors that are most labor-intensive and those that have a higher proportion of migrant or seasonal workers are more heavily impacted by HIV/AIDS in terms of sheer numbers of infections, morbidity, and mortality. These sectors include mining, construction, transportation, and commercial agriculture. However, the total AIDS-related costs in capital-intensive sectors are actually higher, where skilled and semi-skilled workers are essential to productivity. Lost workers in these sectors are harder to replace and more expensive to train.

As a whole, HIV/AIDS affects the ability of the private sector to remain profitable and competitive. The total cost to business varies by study. Estimates from several East African studies, for example, estimate that the costs of HIV/AIDS-related absenteeism (including hire of temporary workers, production cycle disruptions, loss of know-how, and loss of quality) accounted for as much as 25-54 percent of total business costs (UNAIDS, 2002). Aventin and Huard (2000) studied companies in Côte d'Ivoire and found that a 10 percent prevalence rate among workers could lead to AIDS-related costs equal to 10 percent of the total labor cost because of absenteeism and low productivity stemming from ill health. If this ratio holds, multiplying by prevalence rates in high-prevalence countries (which reach up to 39 percent in Botswana) leads to the level of business costs cited by UNAIDS for the East African studies.

Costs of benefits are particularly onerous in the HIV/AIDS environment, with health care costs skyrocketing. One expected business survival tactic is the outsourcing of unskilled labor tasks (such as cleaning and food service), which will reduce the company's financial exposure to HIV/AIDS by removing the costs of medical care and funeral contributions from the company. However, the effect is to place these costs back on the subcontractor (whether a smaller business or an individual). This trend, if it is borne out, is likely to maintain the number of poor and unskilled workers in the formal economy but at a lower effective wage (because of the loss of benefits).

Finally, for producers of domestically or regionally consumed commodities, the private sector is likely to face shrinkage of demand as AIDS-affected consumers shift spending from consumer goods or durables to essentials such as food and medical care. There is little the private sector can do in response to this change in high-prevalence areas.

RECOMMENDATIONS IN THE FACE OF HIV/AIDS

In countries coping with HIV/AIDS, reversing the epidemic must be a top priority in protecting gains to economic growth and poverty reduction. For countries with low-prevalence levels, this task is easier and can be accomplished largely within the realm of health-related programs. For highly affected countries, the task turns to protecting hard-won

development gains from the economic, social, and human ravages of HIV/AIDS, and the response requires participation far beyond the health field.

Those working on economic growth and poverty reduction often find it difficult to identify a role in the response to a health-related crisis of such magnitude and complexity as HIV/AIDS. However, there are some opportunities to have an impact in (1) slowing the epidemic and (2) protecting the poor's access to economic growth activities even in an HIV/AIDS-affected environment. These ideas are presented at two levels below: the policy level and the project level.

Policy-level Opportunities

- For low-prevalence settings, slow the spread of HIV before it becomes entrenched in the general population. Only a few countries have actually slowed or turned the epidemic at that early stage: Senegal and Thailand are usually cited as the most prominent in stopping the epidemic before it became widespread. The common element between these two countries was a committed national political leadership. Therefore, encouragement and support to indigenous, national leadership on HIV/AIDS even where AIDS is least visible may be the most important ways to reduce the long-term economic impacts of the epidemic.
- In high-prevalence countries, help national policy-makers establish priorities with regard to AIDS response around sectors that will secure long-term development gains, such as education, health, and agriculture. In the African context, these sectors must continue to function throughout the AIDS crisis for the country to maintain the preconditions for long-term pro-poor economic growth. USAID's Mobile Task Team) on Education provides an example of how to deliver intensive support to a priority sector, working with Ministries of Education in high-prevalence countries to assess the changing situation, develop and budget for response strategies, then implement and monitor operational plans. Such targeted support to key sectors can have a major impact on the ability of countries to maintain their human and economic capacity through the multiple phases of the AIDS crisis.
- Encourage donors and development partners to include HIV/AIDS in development and poverty reduction planning, including the Poverty Reduction Strategy Paper process. UNDP has developed a checklist with guidance on how to integrate HIV/AIDS into poverty reduction strategies, and recommends that HIV/AIDS be placed in the center of discussions on reaching the Millennium Development Goals (UNDP, 2002).

Project-level Opportunities

- In moderate- and high-prevalence countries, modify projects to allow labor- and capital-poor AIDS-affected families to continue to participate in development activities. For example, in agriculture, innovations may come in the form of labor- and capital-saving technologies or those that allow women-, elderly-, or child-headed households to

accomplish agricultural tasks previously undertaken by men. In the education sector, programs in girls' education may include a distance learning (radio) component, recognizing that girls are most often removed from school in AIDS-affected households.

- In moderate- and high-prevalence countries, explore mechanisms of channeling resources to families that will otherwise resort to irreversible coping behaviors. Such support might give incentives to keep children in school, avoid sale of land, or allow child-headed households to receive direct grant support. These resources are likely to be most essential for women, children, and the elderly—groups that bear the heaviest burden in coping with the costs and impacts of AIDS.
- In moderate- and high-prevalence countries, monitor the impacts and systemic costs of HIV/AIDS in each priority sector. This information is critical for effective planning and response.
- In any country, ensure that development activities are not putting participants at risk of HIV infection. For example, development efforts that encourage population mobility could also put individuals at greater risk of exploitation (such as programs that shift women from subsistence to commercial agriculture). The first principle of responding to AIDS is to ensure that programs do no harm.
- In any country, use development platforms as an opportunity to transmit information on how to avoid HIV infection, how to support those coping with HIV/AIDS, and how to live positively with HIV/AIDS. This sort of call to arms was part of t Uganda's success in turning around an advanced epidemic because it reduces stigma about AIDS and provides information within fora where people already work together and can support one another (for example, within a school system, a health care clinic, a farmers' association, and a local government institution). Tools now available to provide workplace programs in prevention education can be expanded to better match these alternative platforms.

CONCLUSION

HIV/AIDS is now part of the environment within which poverty reduction, economic growth, and pro-poor economic growth takes place. Only when it is considered as a development risk can its impact be managed and minimized. In high-prevalence countries, this is a necessity. In low-prevalence countries, this is an opportunity.

ANNEX A

**ILLUSTRATIVE EMPIRICAL EVIDENCE OF ECONOMIC IMPACT
OF HIV/AIDS ON HOUSEHOLDS**

ILLUSTRATIVE EMPIRICAL EVIDENCE OF ECONOMIC IMPACT OF HIV/AIDS ON HOUSEHOLDS

Evidence of Income Lost as a Result of Sickness and Caretaking:

- **Tanzania:** sick men lost 297 days work because of AIDS; sick women lost 429 days work because of AIDS (Rugalema, 1999)
- **Tanzania:** single caregiver spent 30 percent of labor time on AIDS-related matters; dual caregivers spent 43 percent of joint labor time on AIDS-related matters (Tibaijuka, 1997)
- **Tanzania:** women caregivers spent 60 percent less time on agricultural activities (Rugalema, 1999)
- **Zimbabwe:** Average of 38.5 hours/week dedicated to care for adult with HIV/AIDS (UNAIDS, 2002)
- **Ethiopia:** Women reduced agricultural labor from 33.6 hours per week to 11.6-16.4 hours per week when caring for HIV/AIDS patient (Baryoh, 1994)
- **Zambia:** households coping with chronic illness had annual incomes 46 percent lower than non-affected households (Mutangadura and Webb, 1999)
- **Zambia:** two-thirds of households that lost the male head because of AIDS experienced 80 percent declines in monthly disposable income (Nampanya-Serpell, 2000)
- **Burkina Faso:** 20 percent of rural families reduced agricultural work or abandoned farms because of AIDS (Guinness and Alban, 2000)
- **Kenya:** death of a household head is associated with a 68 percent decline in the household income in rural areas and 47-66 percent in urban areas (Leighton, 1996).

Evidence of Cost Increases as a Result of Sickness and Death:

- **Côte d'Ivoire:** 25-50 percent of net annual income of smallholder farms spent on care of male AIDS patients (on average \$300 per year) (Black-Michaud, 1997)
- **Kenya:** AIDS costs for rural households were estimated at 78 percent of household income in the first year and at 167 percent of household income in the second year, not including funeral expenses (Forsythe and Rau, 1996)
- **Botswana:** each income earner is projected to take on an average of four additional dependents as a result of HIV/AIDS (UNAIDS, 2002)
- **South Africa (Free State Province):** on average, 21 months of household savings used to pay for medical expenses and funerals (UNAIDS, 2002)
- **Tanzania:** in households with one individual sick from AIDS, 29 percent of savings used to manage illness (UNAIDS, 2002)

Evidence of Assets Lost to Pay for Medical Care and Funerals:

- **Malawi:** 15 percent of AIDS-affected household had distress sale of agricultural output (CARE, 2002)
- **Tanzania:** 75 percent of AIDS-affected households sold assets, including chickens, livestock, trees, carpentry tools, furniture, bicycles, and radios, to pay costs of illness (Rugalema, 1999)
- **Thailand:** 41 percent of AIDS-affected households sold land (UNAIDS, 2002)

Evidence of Changing Patterns of Saving and Borrowing:

- **Cambodia:** draw down of savings of 29 percent (UNAIDS, 2002)
- **Malawi:** 14 percent of rural households with chronic illnesses borrowed to cover costs of medical expenses (CARE, 2002)
- **Malawi:** households managing chronic illness pledged 20 percent more household labor to others to get funds for medical expenses than non-affected households (CARE, 2002)
- **Thailand:** 57 percent of AIDS affected households used up personal savings, while 24 percent borrowed from local funds (UNAIDS, 2002)

Evidence of Changing Consumption of Household:

- **Tanzania:** food consumption dropped 15 percent in poorest households after death of an adult (UNAIDS, 2002)
- **Zambia:** those who lost breadwinners showed the following signs of impoverishment: 61 percent moved to cheaper housing, 39 percent lost piped water, and 21 percent of girls dropped out of school (Nampanya-Serpell, 2000)

Evidence of Impact on Women:

- **Tanzania:** main problem for women after death of spouse was access to cash income to purchase inputs rather than labor shortage (Rugalema, 1999)
- After male death, reduction in household's animal husbandry, marketing, farm management, and farm infrastructure (Topouzis, 1999)

ANNEX B
BIBLIOGRAPHY

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Ainsworth, Martha, L. Fransen, and M. Over (eds.), *Confronting AIDS: Evidence from the developing world: Selected background papers for the World Bank Policy Research Report*. Brussels: European Commission, 1998

Anand, K., C.S. Pandav, and L.M. Nath, "The Impact of HIV/AIDS on the National Economy of India," *Health Policy* 47, pp. 195-205, 1999.

Arndt, C. and Jeffrey D. Lewis, "The Macro Implications of HIV/AIDS in South Africa: A Preliminary Assessment," *South African Journal of Economics*, Special Edition: Vol. 68, December 2000.

Aventin, L. and P. Huard, "The Costs of AIDS to Three Manufacturing Firms in Côte d'Ivoire," *Journal of African Economics* 9(2): 161-188, 2000.

Barnett, Tony and Piers Blaikie, *AIDS in Africa*, London: Belhaven, 1992.

Bjorkman, *UNDP National Human Development Report, Burkina Faso*, 2001.

Barks-Ruggles, E., T. Fantan, M. McPherson, and A. Whiteside, "The Economic Impact of HIV/AIDS in Southern Africa," Brookings Institute: Conference Report #9, September 2001.

Baryoh, A., "Socio-Economic Impact of HIV/AIDS on Women and Children in Ethiopia," unpublished manuscript, UNDP, Addis Ababa, 1994.

Black-Michaud, A., *Impact du VIH/SIDA sur les systemes d'exploitation agricoles en Afrique de l'Ouest*, FAO, 1997.

Bloom, David and Ajay Mahal, "Does the AIDS epidemic threaten economic growth?" *Journal of Econometrics* 77(1): 105-24, 1997.

Bloom, David, Ajay Mahal, Jaypee Sevilla, and River Path Associates, "AIDS and Economics," Paper prepared for Working Group 1 of the WHO Commission on Macroeconomics and Health, November 2001.

Bloom, David, River Path Associates, and Jaypee Sevilla, "Health, wealth, AIDS and poverty," Cambridge: Harvard School of Public Health, 2002.

CARE/Malawi, "The Impact of HIV/AIDS on Agricultural Production Systems and Rural Livelihoods in the Central Region of Malawi," 2002.

Center for International Health, Boston University School of Public Health, "The economic impact of HIV/AIDS on South African Businesses," ARCH program document, 2002.

Cuddington, J.T., "Modeling the Macroeconomic Effects of AIDS, with an Application to Tanzania," *The World Bank Economic Review* 7(2): 173-189, 1993.

Dixon, S., S. McDonald, and J. Roberts, "The Impact of HIV and AIDS on Africa's Economic Development," *BMJ*, 324:232-234, 2000.

Donahue, Jill, "Community-Based Economic Support for Households Affected by HIV/AIDS," Discussion Paper on HIV/AIDS Care and Support #6, USAID, June 1998.

Donahue, Jill, "HIV/AIDS and Economic Strengthening via Microfinance." Displaced Children and Orphans Fund, 2000.

Donahue, J., Kabbucho, K. and Osinde, S. "HIV/AIDS – Responding to the Silent Economic Crisis Among Microfinance Clients in Kenya and Uganda." Micro-Save Africa, 2001 (www.microsave-africa.com).

Dorrington, R. "The Actuarial Society of South Africa (ASSA) National AIDS Model—ASSA600," <http://assa.org.za>, 1998.

Ferreira, Pedro Cavalcanti and Samuel Pessoa, "The Long-Run Economic Impact of AIDS," Rio de Janeiro: Graduate School of Economics, Fundacao Getulio Vargas, Praia de Botafogo, February 2003.

Flores, Rafael, "Health and Nutrition Emerging and Reemerging Issues in Developing Countries," Brief 1 of 11, *2020 Focus*, IFPRI, February 2001.

Forsythe, Steven (ed.), *State of the Art: AIDS and Economics, International AIDS Economics Network* July 2002.

Forsythe, Stephen and Bill Rau (eds.), *AIDS in Kenya: Socio-Economic Impact and Policy Implications*, Arlington, Virginia: Family Health International, 1996.

Greener, R., K. Jefferis, and H. Siphambe, "The Impact of HIV/AIDS on Poverty and Inequality in Botswana," *Journal of South African Economics*, Vol. 68: 5, pp. 888-915, 2000.

Guinness, L. and Anita Alban, "The Economic Impact of AIDS in Africa, A Review of the Literature," UNAIDS Background Paper, 2000.

Haacker, Markus, "The Economic Consequences of HIV/AIDS in Southern Africa," IMF Working Papers 02/38, 2002.

International Labour Organization, "HIV/AIDS: A threat to decent work, productivity, and development," Document for discussion at the Special High-Level Meeting on HIV/AIDS and the World of Work, Geneva, June 8, 2000.

ING Barings/South Africa, "The Demographic Impact of AIDS on the South African Economy," Johannesburg, 1999.

ING Barings, "Economic Impact of AIDS in South Africa: A dark cloud on the horizon," Johannesburg, April 2000.

Haacker, Markus, "Modeling the Macroeconomic Impact of HIV/AIDS," IMF Working Paper WP/02/195, International Monetary Fund, 2002.

Kambou, G., S. Devarajan, and M. Over, "The Economic Impact of AIDS in an African Country: Simulations with a General Equilibrium Model of Cameroon," *Journal of African Economies*, Vol. 1: 1, pp. 103-130, 1992.

Kwaramba, Phil, *The Socio-Economic Impact of HIV/AIDS on Communal Agricultural Production Systems in Zimbabwe*, Zimbabwe Farmers Union and Friederich Ebert Stiftung, Harare, 1997.

Leighton, C., "The Direct and Indirect Costs of HIV/AIDS," *AIDS in Kenya: Socio-Economic Impact and Policy Implications*, edited by S. Forsythe and B. Rau, 1996.

Loewenson, Rene and Alan Whiteside, "HIV/AIDS Implications for Poverty Reduction," UNDP Background Paper prepared for the UNDP for the United Nations General Assembly Special Session on HIV/AIDS, June 25-27, 2001.

McPherson, Malcolm, "Macroeconomic Models of the Impact of HIV/AIDS," draft paper, Center for Business and Government, JFK School of Government, Harvard University, 2003.

Mutangadura, Gladys, Helen Jackson et al., *AIDS and African Smallholder Agriculture*, Harare: SafAids, 1999.

Mutangadura, Gladys and Douglas Webb, *The Socio-Economic Impact of Adult Morbidity and Mortality on Households in Kafue District, Zambia*, Harare: SafAids, 1999.

Nampanya-Serpell, Namposya, "Social and Economic Risk Factors for HIV/AIDS-Affected Families in Zambia," Paper presented at the International AIDS Economics Network Symposium, Durban, July 7-8, 2000.

National Intelligence Council, "The Next Wave of HIV/AIDS; Nigeria, Ethiopia, Russia, India and China," ICA 2002-04 D, www.cia.gov, September 2002.

Over, Mead, "The Macroeconomic Impact of AIDS in Sub-Saharan Africa," Technical Working Paper No. 3, Washington, DC: The World Bank, 1992.

Rugalema, Gabriel, *Adult Mortality as an Entitlement Failure: AIDS and the Crisis of Rural Livelihoods in a Tanzanian Village*, 1999.

Rugalema, Gabriel, "Consequences of Loss of Labour due to HIV/AIDS in Smallholder Households in a Buhaya Village, Bukoba District, Tanzania," Paper presented at the East and Southern Africa Regional Conference Responding to HIV/AIDS: Development Needs of African Smallholder Agriculture," Harare, June 8-12, 1998.

Shelton, Nicholls, Roger McLean, Karl Theodore, Ralph Henry, and Camara Bilali, "Modelling the Macroeconomic Impact of HIV/AIDS in the English Speaking Caribbean: The Case of Trinidad and Tobago and Jamaica," 2000.

Stover and Bollinger, "The Economic Impact of AIDS," The Futures Group International: The Policy Project, 1999.

Tibaijuka, A.K., "AIDS and Economic Welfare of Peasant Agriculture: Case studies from Kagabiro Village, Kagera Region, Tanzania," *World Development*, Vol. 15, No. 6, 1997, pp. 963-975.

Topouzis, Daphne, "The Implications of HIV/AIDS for Rural Development Policy and Programming: Focus on Sub-Saharan Africa," Study Paper No. 6, UNDP, 1998.

Topouzis, Daphne, "Sustainable Agricultural/Rural Development and Vulnerability to HIV/AIDS," UNAIDS Best Practice Paper, FAO/UNAIDS, 1999.

Topouzis, Daphne, "Measuring the Impact of HIV/AIDS on the Agriculture Sector in Africa," Background Paper, UNAIDS, December 2000.

TvT Associates, ed., "Children on the Brink 2002: A Joint Report on Orphan Estimates and Orphan Strategies," USAID Synergy Project, July 2002.

UNAIDS, *Report on the Global HIV/AIDS Epidemic, 2000.*

UNAIDS, *Report on the Global HIV/AIDS Epidemic, 2002.*

UNDP *National Human Development Report, Botswana, 2000.*

UNDP, "Policy Note: HIV/AIDS and Poverty Reduction Strategies," August 2002.

White, Joanna, and Elizabeth Robinson, *HIV/AIDS and Rural Livelihoods in Sub-Saharan Africa*, National Resource Institute/DFID, Policy Series 6, 1999.

Whiteside, Alan, "HIV/AIDS, Health, and Education," Chapter 4 in *The State of the Art: AIDS and Economics* (Stephen Forsythe, ed.), 2002.

World Bank, *Confronting AIDS: Priorities in a Global Epidemic*, Oxford: Oxford University Press, pp. 215-216, 1997.

World Bank, *World Development Indicators, 2001.*

World Health Organization, "World Health Report," 2002. (www.ilo.org)