IMPACT OF HIV/AIDS ON HOUSEHOLD VULNERABILITY AND POVERTY IN VIET NAM

Consultant Report
September 2004

THE Futures GROUP INTERNATIONAL
Executive Summary

The HIV/AIDS epidemic is in a concentrated stage in Viet Nam, although the epidemiologic evidence already points to intensification of HIV prevalence in vulnerable populations and geographic expansion of the epidemic to high risk groups throughout Viet Nam. Official estimates suggest that in 2004 0.5 percent of the adult population is HIV positive. Large numbers of people are already feeling the impact of HIV/AIDS in Viet Nam, even at the current low prevalence. Because of the country’s large population size the present prevalence translates into more people with HIV/AIDS than when a country like Botswana, the country with the highest HIV prevalence, had an adult prevalence rate in excess of 20 percent. In addition, the people affected by the consequences are not only those individuals who are infected, but also their parents, their children, their spouses and their brothers and sisters. The importance of investments in mitigating the impact of HIV/AIDS is therefore becoming increasingly important, alongside HIV prevention interventions.

Very little is known about the impact of HIV/AIDS in low-prevalence countries like Viet Nam. Given this low prevalence, the impact on per capita economic growth is likely to be small. However, this does not mean that there is no economic impact.

HIV/AIDS is a disease with deep economic roots that can be traced to the household level. Globally there is a growing body of theoretical and empirical evidence of the negative direct and indirect impacts of HIV/AIDS at the household level. Households are the first line of defense because the burden of HIV/AIDS is first felt by the affected households. In order to better understand the micro-economic or household level impacts of HIV/AIDS in Viet Nam a Household Impact Case Study was conducted, which collected information on the household income losses and increased HIV/AIDS-related expenditure. The proportion of household expenditure spent on healthcare in Viet Nam is among the largest globally. The emphasis on the impact of increased AIDS-related health spending on households is therefore particularly pertinent. Healthcare cost is the largest burden on household consumption expenditure, and was identified as the form of assistance that households with a person living with HIV/AIDS (PLWHA) would value the most. A better understanding of the costs of care and treatment of HIV/AIDS will therefore inform policy decisions regarding greater cost sharing by government. To this end, a second case study — the Hospital Impact Case Study — of the hospital costs and broader health sector costs of HIV/AIDS was done.

Microeconomic Impact of HIV/AIDS: Households Bearing the Brunt?

Key findings from the Household Impact Case Study are:

- Large healthcare costs: Total healthcare expenditure for households with a person living with HIV/AIDS (PLWHA) was found to be 13 times higher than the average household health spending in Viet Nam.
Funeral costs add to the burden: Families of PLWHAs in Viet Nam tend to bury the deceased HIV/AIDS patients very soon after their death and have smaller funeral ceremonies. This implies smaller contributions from relatives and neighbors for assistance with funeral costs.

Non-trivial loss of employment and income by PLWHAs: More than a third of the subjects interviewed were employed or were working at the time of death. The reported loss of income was VND7,416 thousand (US$480), approximately equal to the household consumption expenditure on households form the poorest 20% of the population.

Burden of care-giving falls on women: About Three quarters of the responsibility for care-giving fall on women in the family – mothers, wives, and sisters.

Loss of employment and income by caregivers: Three-quarters of PLWHAs interviewed required the assistance of a caregiver. On average, one caregiver per PLWHA was required, with the caregiver spending nearly five hours a day caring for the PLWHA. A quarter of caregivers reported having to give up a job in order to spend time with the infected person and just over a third of caregivers experienced income reduction due to reduced hours worked.

Assistance with healthcare costs the most urgent need: The most urgent form of assistance required as healthcare for the HIV positive household member – specifically, in the form of access to drugs and treatment at hospitals.

Coping strategies: Qualitative information suggest coping strategies are more often “struggling strategies” because of the desperation households face. In many instances, the elderly in the household had to do menial work to generate additional income. Borrowing money is the most common form of coping (often at high interest rates), followed by reduced food and healthcare consumption, as well as the selling of assets.

Caregivers of PLWHAs

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<tr>
<td>mother</td>
<td>51%</td>
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<tr>
<td>father</td>
<td>10%</td>
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<tr>
<td>sister</td>
<td>7%</td>
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<tr>
<td>wife</td>
<td>16%</td>
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<td>other (grandparents, brothers, children)</td>
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Future support needed by households

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<td>Treatment for PLWHA</td>
<td>31%</td>
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<tr>
<td>Grant money</td>
<td>30%</td>
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<tr>
<td>Lend money</td>
<td>22%</td>
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<tr>
<td>Care for the PLWHA</td>
<td>7%</td>
</tr>
<tr>
<td>Transport to health facility</td>
<td>5%</td>
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<tr>
<td>Household chores</td>
<td>3%</td>
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<tr>
<td>Household chores</td>
<td>3%</td>
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New HIV infections are increasingly appearing among young adolescents. The impact on the household of a adolescent who dies prematurely due to HIV/AIDS — in terms of sacrifices, lost investments and unrealized dreams — is even more significant in Viet Nam given that in recent times most families have between 2-3 children.

The convergence on households of the short term income and expenditure effects as well as the longer term effects suggest that households of PLWHAs will continue to bear the brunt of the epidemic, and need to be the target of efforts aimed at mitigating the impact of the epidemic.

HIV/AIDS and Poverty: Reducing the Pace of Poverty Reduction

At the household level the largest impact of the epidemic is via increased HIV/AIDS-related health spending and loss of income. From a poverty-impact perspective, it is particularly compelling that HIV/AIDS-affected households are affected by five of the seven most common risks identified in Viet Nam: illness, life cycle events (e.g., funerals), drug addiction, loss of physical assets, and unemployment. Indeed, the participatory poverty assessments indicated that, in recent years, illness was the most common cause of poverty in Viet Nam. Even if as much as half of the impact of increased health spending and loss of income were mitigated through various coping strategies, per capita consumption expenditure among households of PLWHAs may drop by between 40 and 50 percent.

It is estimated that in 2004 126,000 people will either become newly poor or fall deeper into poverty because of HIV/AIDS. This number could potentially increase over the next decade to reach 504,000 in 2015. Households with a PLWHA in all but the richest 20 percent of households will below the poverty line. Those in the poorest 40 percent of households will fall below the food poverty line due to the expenditure and income effects of HIV/AIDS.
HIV/AIDS, if unaddressed, will slow down poverty reduction efforts between 2004 and 2015 by approximately one tenth annually.

The emergence of HIV/AIDS as a risk that increases households’ vulnerability needs to be fully acknowledged in poverty assessments in Viet Nam and taken into account as a factor that may potentially slow down the rate of poverty reduction in the future. Within this context, HIV/AIDS needs to be formally included in the government’s efforts to reduce poverty.

Responding to the Challenge: Healthcare Resource Requirements

The Hospital Impact Case Study collected data on hospital costs of HIV/AIDS. The key themes that emerged from the case study are: (1) hospital care and treatment services for HIV/AIDS are poor and severely limited by resource constraints in the health system; (2) healthcare-seeking behavior by PLWHAs is strongly influenced by stigma; and (3) most of the HIV/AIDS care and treatment costs were borne by households.

How much resources are needed for care and treatment for HIV/AIDS? The costs of three tiers of care and treatment were projected: (1) the cost of diagnosis, palliative care, and treatment of opportunistic infections; (2) the first tier plus opportunistic infection prophylaxis; and (3) the second tier plus anti-retroviral therapy. It is estimated that in 2004, the basic tier of care and treatment will cost VND 26.2 billion (US$1.7 million) and is projected to increase by 45 percent to VND37.9 billion (US$2.5 million) in 2007. Adding the cost of opportunistic infection prophylaxis, increases the healthcare costs in 2004 by 17 percent. basic level of palliative and treatment of opportunistic infection costs less than half a percentage point of government spending on healthcare and is within the range of affordability for the country.

As a starting point, funding for a basic package of care and treatment for PLWHAs will go a long way to address the under-treatment currently provided in the health system, and reduce the burden of care and treatment costs on households of PLWHAs.
Even if the government decides not to finance anti-retroviral therapy, households will continue to spend substantial resources on anti-retroviral drugs. The evidence from the two case studies suggests widespread irregular use of anti-retroviral drugs in a manner that will contribute to resistance and in the long run complicate the fight against HIV/AIDS. The annualized cost of antiretroviral drugs was found to be in excess of VND60 million (US$4,000). Not only are PLWHAs not getting the health benefits as a result of irregular anti-retroviral drug use, but their households are also feeling the devastating consequences of expensive anti-retroviral therapy. Government can assist households by negotiating for price reductions with the pharmaceutical industry with the support of multilateral development partners.

**Responding to the Challenge: Mitigating the Poverty Consequences**

Given its impoverishing consequences AIDS should be formally recognized as a poverty risk in Viet Nam and included in poverty assessments and poverty strategies. Informal support mechanisms such as community and extended family assistance need to be complemented by formal mechanisms of assistance such as Health Care Funds for the Poor created by Decision 139 in 2002. For households of PLWHAs who are not yet poor, ways need to be devised to assist households with drug expenditures as well as in-patient hospitalization costs. Formal support to poor households of PLWHAs to mitigate the impact of the income and expenditure effects on household consumption needs to be facilitated. Examples of these social assistance instruments are poverty certificates. By using existing forms of public assistance the cost of government funded assistance will more likely be affordable.

**Stigma Worsens the Impact and Hampers the Response**

The convergence of the impacts of HIV/AIDS on the households of PLWHAs — whether from the perspective of the expenditure effects, the income effects, or the lost education investments — suggest that HIV/AIDS does not only affect PLWHAs. Stigma exacerbates the dire consequences HIV/AIDS presents to the children, the siblings, the spouses, the parents, and the grandparents of PLWHAs. People experience stigma at a time when they need society’s support most.
There are several features of Viet Nam that, depending on the government’s response, may continue to slow down the rapid spread of HIV/AIDS. For example, the status of women in Viet Nam is reasonably good compared to the situation in many Asian countries. Viet Nam has strong mass-based organizations, and it can organize effectively to address critical problems — as illustrated by the dramatic success of its family planning program. The government also has the experience of dealing swiftly and effectively with epidemics (e.g., SARS). Moreover, the Vietnamese health system is reasonably well developed for a country of this level of development, particularly in rural areas. However, the level of stigmatization of HIV/AIDS in the future will determine whether these factors are indeed positive factors that can assist mitigating the spread and impact of HIV/AIDS in Viet Nam.

Given the relatively early stage of the epidemic, Viet Nam has a unique opportunity to respond and stem the spread of HIV/AIDS and mitigate the impact of existing infections. However, the window of opportunity is gradually closing and swift, decisive action is needed.

Lastly, this study contributes to a growing body of information and evidence of the social and economic consequences of HIV/AIDS in Viet Nam beyond the medical context. There can be no single analysis of the social and economic impacts of HIV/AIDS given how varied the consequences are. It is anticipated that this report presents only selected parts of bigger picture and hopefully this will open the door to further analyses of the social and economic consequences of HIV/AIDS in Viet Nam. By focusing on the microeconomic consequences of HIV/AIDS, emphasizing the impact on household vulnerability and poverty, and making linkages to the first Millennium Development Goal, this study places HIV/AIDS squarely within a development context. It is anticipated that the findings presented in this report will inform planning and, where necessary, encourage policy reform that will result in implementation of interventions aimed at mitigating the impact of HIV/AIDS in Viet Nam. The report provides evidence that can guide a comprehensive response to HIV/AIDS in Viet Nam, i.e., one that includes impact mitigation alongside the prevention of new HIV infections.

The main report is divided into six sections. Part I provides an introduction and context to the study. Part II reflects on Viet Nam’s development achievements, and making the linkages between economic development and the spread of HIV/AIDS. Part III focuses on the household impact of HIV/AIDS and on the achievement of key development objectives, specifically the first Millennium Development Goal pertaining to poverty. This analysis draws on the empirical evidence collected as part of the Household Impact Case Study. Part IV assesses health sector costs of care and treatment using empirical evidence from Viet Nam collected as part of the second case study, namely the Hospital Impact Case Study. Part V concludes with the implications of the findings for Viet Nam. In part VI the appendices and technical annexures are presented that underpin many of the report findings that are presented. Importantly, in Appendix A key indicators are proposed for monitoring the development impact of the epidemic in Viet Nam. Appendix
B briefly describes the level and trends of the HIV epidemic. In Appendix C and D the theoretical framework, methodology and analytical strategy and complete results of the two case studies are reported.
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<tr>
<th>Abbreviation</th>
<th>Description</th>
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<tr>
<td>ADB</td>
<td>Asian Development Bank</td>
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<tr>
<td>AHARN</td>
<td>Asian Harm Reduction Network</td>
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<tr>
<td>AIDS</td>
<td>Acquired immune deficiency syndrome</td>
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<tr>
<td>ARV</td>
<td>Anti-retroviral</td>
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<tr>
<td>GDP</td>
<td>Gross domestic product</td>
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<td>GFATM</td>
<td>Global Fund to Fight AIDS, Tuberculosis and Malaria</td>
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<td>Human immunodeficiency virus</td>
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<td>IDU</td>
<td>Injecting Drug User</td>
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<td>MDG</td>
<td>Millennium Development Goals</td>
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<td>OECD</td>
<td>Organization for Economic Cooperation and Development</td>
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<td>Prevention of Mother to Child Transmission</td>
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PART I: BACKGROUND AND CONTEXT
**The Case of Quang**

Had he been alive today, he would have been 49 years old. But he died four months ago. His father and brothers decided to let him die at the hospital, despite his wish to die at home. He died in the TB hospital at 9 AM, and was brought to the hospital morgue at 9.30. By noon of the next day his remains and ashes were already in a small pot, laid to rest in a temple. The family chose to cremate him rather than burying because it would cost them a few million dong more had he been buried. Few people came to his funeral besides his family members.

When Quang got married his wife asked his mother whether Quang was using drugs. But his mother said she didn’t know, out of the fear that Quang would lose the chance of getting married and having children. Their son was born few months later. Although his wife got pregnant a few more times, she decided to go for an abortion since she worried that they would not have money to raise their children properly given Quang’s drug habits.

Quang was sent to drug detoxification centers three times. During his last and most arduous stay in a center in Ca Mau, which lasted about one year and a half, Quang was able to give up his drug habits. But during that time, his wife left him. When Quang got out of the center in Ca Mau, he returned to stay with his parents at the age of 42. His mother didn’t know the reasons that led him to go for testing when he returned from Ca Mau, but shortly thereafter he told her: “Mother, I would not be able to live for long because I got infected with HIV. I want to work and save some money. Since my wife has left me, I want you to keep my savings so that you can take care of me when I became ill.”

He started working as a xeom driver and saving his money. He worked very hard, and all clients liked him because he was very diligent and friendly. “He gave me all the money,” his mother recalled, “and every month or so I bought one tenth of a tael of gold for him. That was the way he made his savings.” Besides saving money for his illness and death, Quang also saved money to pay for his son’s tuition and other expenses.

It was a little more than two years ago that Quang first discovered a lump on his neck and after testing they finally concluded that Quang had developed AIDS. This first hospitalization cost more than VND2 million. He was then transferred to the infectious disease hospital where there is a special unit for AIDS patients, and then to the tuberculosis hospital. Quang became a regular at these two hospitals ever since those first hospitalizations. But as soon as he got discharged from hospitals, he returned to work harder as if he knew that his days were numbered. His tuberculosis got worse. At nights, he often slept in the building hallway since he didn’t want to wake up the whole family with his incessant coughing. Nobody in the building complained. After all, AIDS has claimed the lives of many young men in the neighborhood.

His health started deteriorating rapidly and he started having diarrhea. His family brought him to the AIDS unit and he stayed there for a month. It cost him more than VND5 million. When his condition improved it was Tet, and Quang returned home for what was his last Tet with his family. Soon after, diarrhea and constant pain weakened him tremendously: he couldn’t walk down the stairway by himself. Another month of hospitalization cost him another VND5 million. He was sent home again when his condition somewhat improved. But he had to return to the hospital once a week to get the medications prescribed for him. Three more months passed, three more months of suffering for him and his family. Finally they brought him back to the TB hospital, this time with excessive coughing, diarrhea, swollen belly and fever. After three days, doctors told his mother that his condition was very severe and there was no hope that he could survive. “I told my husband that the doctor gave up on him and asked us to bring him home,” his mother recalled, “But my husband and my children didn’t want.” She told me that they feared of contagion and, furthermore, they wanted to avoid the hassles that organizing his funeral in their small home would entail.

His savings dried up quickly since he developed AIDS. Quang’s mother estimated that it cost more than VND30 million in two years to pay for his multiple hospitalizations and medications. Five taels of gold that he was able to save in the last years of his productive life and the mother’s own savings in gold and jewellery quickly disappeared. She still keeps the stack of medical bills, records of expenditures, CT scan film, X-ray films, prescriptions, and blood test records. She keeps them to show Quang’s younger brothers and sisters, so that they knew how costly his medical care was. It was not easy to ask his brothers and sisters to help financially because they were not rich themselves and because they couldn’t imagine how costly his medical care was. They thought that Quang still had his savings. It was only when the mother told them that she had sold all her savings that they decided to make contributions to pay for his final days in the hospitals and the funeral costs. His mother also borrowed another VND2 million from her friends, who were kind enough not to ask for interest.

Quang’s mother remembers him as a caring son and a loving father. Unlike the negative images of injecting drug users and people with HIV/AIDS that one gets from media, she said that he never stole anything from the family or the neighbors. With these positive images she and her family moved on with a new life although continuing to pay for the debt of Quang’s illness.
Introduction

The unprecedented human suffering that HIV/AIDS causes – not only the PLWHA but also family and household members, as the case of Quang highlights – provides the starting point for assessing the economic impact of HIV/AIDS. The HIV/AIDS epidemic is in a nascent and concentrated stage in Viet Nam. The country is, however, at risk of a more expanded HIV/AIDS epidemic and therefore vulnerable to its health, economic and social consequences. Because of the large population size, large numbers of people will feel the impact of HIV/AIDS in Viet Nam – even at the current low prevalence. For example, the present prevalence translates into more people with HIV/AIDS as when a country like Botswana, the country with the highest HIV prevalence, had an adult prevalence of in excess of 20 percent. While the HIV/AIDS epidemic has not shown the explosive spread as in Africa, Asia’s HIV infection rate is growing at among the fastest rates worldwide and has not stabilized (UNAIDS 2004). Presently Asia accounted for between 22 percent and 29 percent of all new infections (UNAIDS 2004). In Viet Nam, although at one of the lowest levels in Asia, the rate continues to increase unabated, with an estimated 40,000 new HIV infections reported annually (Viet Nam Technical Working Group on Estimations and Projections 2004: 17).

What is so special about AIDS? AIDS is new. AIDS is one of the 30 new diseases that have emerged during the last two decades of the 20th century (WHO 1999). It is also the most serious of all the new threats, with 38 million people currently living with HIV/AIDS, and having already killed 2.9 million people (UNAIDS 2004). Second, is the cost associated with HIV/AIDS. Relative to other illnesses, the costs of diagnosis, care and treatment of HIV/AIDS-related opportunistic infections and lifetime anti-retroviral treatment of AIDS are high. The opportunity costs associated with the long duration of illness contribute to the costliness of AIDS. Third, HIV/AIDS affects prime-age adults, who are economically productive, biologically reproductive, and responsible for the support of children and elderly dependants. Not only is HIV/AIDS the single biggest threat to life expectancy in many countries, but it also reduces the size of the working age population. Fourth, is the considerable lag between time of infection and its consequences. On the one hand, this may mislead governments into believing that the problem is less serious than it really is at a given time. On the other hand, it means that the benefits of investments to prevent HIV infection are subjected to considerable discounting.

Lastly, it is becoming increasingly clear that health is of profound importance to all people of the world. The United Nations Millennium Poll identified health as the item that people value most in life (WHO 2001b). There is also now more evidence of the links between health and economic development (WHO

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1 As Appendix B demonstrates, case reporting systems substantially underestimate the true incidence of HIV/AIDS in any country. However, this figure is used for illustrative purposes only to make the point that even a measure that vastly underestimates the true incidence shows alarming annual increase.

2 Alongside Ebola, Hepatitis C, the Hanta virus, new variants of Creutzfeldt-Jacob disease (get UNGASS background document).
Moreover, HIV/AIDS has magnified these links. Never before has health been more at the center of development debates – examples are the United Nations General Assembly Special Session on HIV/AIDS (UNGASS) in 2001, the World Health Organization’s Commission on Macroeconomics and Health in 2001 and the World Trade Organization debates about pharmaceuticals for HIV/AIDS in 2003. Furthermore, health is one of the most important assets of the poor, and one of the most important factors that allow poor households to emerge from poverty. Conversely, ill health can drag entire households back into poverty.

Why is an impact assessment important in a country where HIV prevalence is less than 1 percent? A key motivation for impact assessments in low prevalence countries is in order to inform the implementation of effective prevention activities (UNFPA 2003: 33) and to inform targeted care and support strategies. Because of the long incubation period of the disease and the slow unfolding of the social and economic consequences, the epidemic has usually progressed significantly by the time the disease becomes clinically detected at the health services or in the community (Loewenson and Whiteside 2001). It is only the tip of the iceberg that is detected. For example, in October 2003 the system of case reporting in Viet Nam has detected a cumulative number of 73,660 infections, yet estimates based on sentinel surveillance data suggest a number of 330,000 PLWHAs in Viet Nam. The other point to remember is that while Viet Nam has a national adult prevalence of below 1 percent, HIV prevalence in selected sub-national sites is well in excess of the national prevalence. For example, in Chiang Mai in Thailand prevalence increased from 1 percent to 8 percent from 1989 over a period of six years.

The most compelling motivation for a socio-economic impact assessment in Viet Nam is that in this country “(t)he level and rate of increase of HIV/AIDS appears to be at a point at which it could either be contained, or could result in a major pandemic within a decade” (World Bank/Poverty Working Group 2002: 9). Very few countries are at the point where they have the opportunity to intervene and avert the human and economic consequences that so many countries, including those in Asia, have experienced. Viet Nam has the benefit from hindsight, as to which interventions work, but also the knowledge that the benign neglect that characterized many countries’ response to the HIV/AIDS epidemic in the 1990s has in all instances taken considerable human toll.

HIV/AIDS is a “problem with deep economic roots and potentially serious economic consequences” (Bloom and Mahal 1995: 1). However, because of the low HIV prevalence in Viet Nam, the aggregate demand and supply-side effects used in macroeconomic modeling of the impact of HIV/AIDS are unlikely to be significant. However, that does not mean that the impacts are negligible. The deep economic roots of HIV/AIDS can be traced to the household level. There is theoretical and empirical evidence of the negative direct and indirect impacts of HIV/AIDS at the household level that cannot be

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3. This commission examined the interrelations among investments in health, economic growth and poverty reduction (WHO 2001a).
disputed (Bachman and Booyse 2003; Bell et al. 2003; Chong 1999; Donahue 1998; Greener 2000; Lundberg et al. 2000; Pitayanon et al. 1994; Roy et al. 2000). In response to an economic shock, such as HIV/AIDS, a household tries to minimize the impact of the shock on household welfare by adopting various coping strategies to mitigate impact. Impact mitigation is done by using the private information uniquely available to households (Holzman and Jorgenson 1999). It is therefore critical to understand the household-level impacts of the epidemic in order to assess the aggregate impact at the macro-level. This is of particular importance given that 47 percent of the population in Viet Nam is poor or near-poor (Haughton et al. 2001).

This report focuses especially on the micro-level impact of HIV/AIDS on household vulnerability and its consequences for poverty at the macro-level. Another key emphasis of the report is the potential impact of the HIV/AIDS epidemic on Viet Nam’s development, with particular emphasis on how HIV/AIDS might hamper development efforts aimed at reducing poverty. Poverty reduction is increasingly being identified as a key objective of development policies by multilateral organizations and national governments (e.g., the Comprehensive Poverty Reduction and Growth Strategy). The potential impacts of HIV/AIDS at the macro- and micro-levels are used to identify the linkages with Viet Nam’s path of development and future development achievements. This is done by providing an assessment of the potential impact of HIV/AIDS on selected Millennium Development Goals. The report furthermore identifies indicators (Appendix A) that will enable the government of Viet Nam and donor partners to track progress of the epidemic and, importantly, its development impacts.

While HIV/AIDS is a multisectoral and development issue, it has profound implications for the health sector. This sector, especially the public health sector, is most immediately vulnerable to the impacts of the HIV/AIDS epidemic in any country. The healthcare needs of the population dramatically increases because of HIV/AIDS-related morbidity, placing stress on the country’s healthcare services. This may be reflected in increased government health expenditure, with increased demands being made on health budgets at all levels of government. The impact of HIV/AIDS on the health sector and costs of intervening are therefore evaluated separately.

The report is divided into six sections. Part I provides an introduction and context to the study. Part II reflects on Viet Nam’s development achievements, and making the linkages between economic development and the spread of HIV/AIDS. The empirical evidence from developing countries, with special emphasis on the experience of South and South-East Asia is used to assess Viet Nam’s increased vulnerability to HIV/AIDS that is associated with its remarkable economic and development gains. Part III focuses on the household impact of HIV/AIDS and on the achievement of key development objectives, specifically the first Millennium Development Target pertaining to poverty. HIV/AIDS and poverty, explores the health-poverty nexus and identifies the factors that influence households’ vulnerability to the effects of HIV/AIDS. The key findings from the first case study that was
conducted as part of this study, namely the household impact case study, are reported. The full report of the case study — which includes the theoretical framework, methodology and analytical strategy and complete results — is reported in Appendix C. Part IV assesses health sector costs of care and treatment using empirical evidence from Viet Nam collected as part of the second case study, namely the Hospital Impact Case Study. The full report of the case study is reported in Appendix D. Part V concludes with the implications of the findings for Viet Nam. In part VI the appendices and technical annexures are presented that underpin many of the report findings that are presented. Importantly, in Appendix A key indicators are proposed for monitoring the development impact of the epidemic in Viet Nam. Appendix B briefly described the level and trends of the HIV epidemic in Viet Nam. In Appendix C and Appendix D the theoretical framework, methodology and analytical strategy and complete results of the two case studies are reported.

This report contributes to a growing body of information and evidence of the social and economic consequences of HIV/AIDS in Viet Nam beyond the medical context. There is no one single analysis of the social and economic impact of HIV/AIDS — the consequences of HIV/AIDS are too varied, dynamic and widespread to lend itself to any finite analysis. This report presents only selected parts of bigger picture and hopefully this will open the door to further analyses of the social and economic consequences of HIV/AIDS in Viet Nam in order to inform a comprehensive response to the HIV/AIDS epidemic in Viet Nam.
PART II: WEALTH AND HIV/AIDS
Economic Growth and HIV/AIDS

Impact of Economic Growth on HIV/AIDS

Economic development is associated with infrastructure development, increased mobility associated with internal migration (as workers migrate to centers of wealth and employment and often return to their families in their village of origin). This is exacerbated by increases in disposable income and patronage of sex workers.

Between 1993 and 1998 Viet Nam’s economy grew at an average annual rate of 8.9 percent – globally the 4th fastest rate (Haughton 2001: 9). This was accompanied by significant improvements in living standards (Figure 12). Numerous development indicators have improved and the first Millennium Development Goal (MDG) pertaining to poverty reduction has already been achieved. The Doi Moi reforms brought about openness to trade, infrastructure improvement, increased employment mobility, urbanization, and improvement in average incomes (World Bank/Poverty Working Group 2000). However, the literature suggests that many of these factors potentially contribute to the country’s vulnerability to HIV/AIDS (Bloom et al. 2001; Bloom et al. 2002; WHO 2001a; WHO 2001b; UNFPA 2003).

Figure 1: Growth and economic development in Viet Nam

Labor Mobility, Infrastructure Development and Disposable Income

There is widely acknowledged epidemiologic evidence that migration increases people’s vulnerability of HIV/AIDS (Deaton and Lubotsky 2001; Nielsen 1994; UNFPA 2003). Labor migration was identified as one of the key determinants of HIV prevalence rate in a cross-country regression of 60 developing countries (Bonnel 2000: 836). Migrants have a higher rate of HIV
infection than those who do not migrate, regardless of the HIV prevalence at the sites of origin and destination of the migration (UNFPA 2003). The factors that contribute to the spread of HIV infection among labor migrants are: (1) long absence from the social control of the home environment; (2) housing in single-sex accommodation; (2) lack of access to reproductive health services and medical care for STIs; (3) alcohol and drug abuse related to loneliness and boredom; and (4) a “dysfunctional symbiosis between migrant labor and sex work” (UNFPA 2003: 25). Because labor migrants often return to their sites of origin which is most often rural villages, migration also contributes to the spread of HIV in rural areas.

In Viet Nam migration has been mainly internal – rural to rural as well as rural to urban migration. The urban population in Viet Nam has progressively increased from a low of 18.8 percent in the 1970s to 24.0 percent in the 1990s affecting close to 10 million people (World Bank 2002). This increased urbanization is also reflected in employment patterns. The share of agriculture to the economy decreased from 71 percent in 1993 to 66 percent in 1998. These sectoral shifts are also accompanied by increased urbanization. Employment increased at an average annual rate of 1.8 percent between 1993 and 1998 (International Center for Economics 2002) with the smallest increase being in the agriculture sector (i.e., rural) and the largest in the industrial and services sectors (largely urban). It should however be noted that urbanization has progressed more slowly than in many countries in the region (Knowles 2003a) and may at least in part explain why the spread of HIV/AIDS in Viet Nam has been slower than other countries in the region.

Labor mobility is, furthermore, facilitated by infrastructure improvement. Although there is currently little evidence to quantify the extent of the HIV risks caused by development projects (e.g., infrastructure projects etc.) a strong case is building for making HIV impact assessment a routine part of such programs (Bloom et al. 2001: 5). As Viet Nam progressively improves its trade infrastructure, for example, road accessibility to rural areas, improved waterway shipping and modification of port facilities, there may be positive outcomes such as improved growth, but there may also be negative consequences such as increased vulnerability to HIV/AIDS.

A further key factor determining vulnerability to HIV/AIDS is disposable income and patronage of sex workers. In Viet Nam, household consumption expenditure grew annually by 10.6 percent in the early 1990s, and by 1999 this rate increased to 18.0 percent (World Bank 2002). Consumption expenditure (per capita) increased by 42.7 percent from VND1,936 thousand (US$129) in 1993 to VND2,764 thousand (US$184) in 1998 (Haughton et al. 2001: 15). Increased disposable income exacerbates the impact of labor mobility and infrastructure on HIV risk.

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4 Difference between the average urban population for 1970s (10.1 million) and urban population for 2000 (18.8 million) (Source: World Bank 2002).

5 The Universiti Sains Malaysia, with the support of UNDP, has recently developed a practical tool for use during the design and appraisal stages of development projects (www.hivundp.apdip.net/Regional/overview.htm).
These various factors are impossible to isolate empirically and quantify. However, these factors have to be taken into account when planning the response to HIV/AIDS in Viet Nam.

**Impact of HIV/AIDS on Economic Growth: Conflicting Evidence or Countervailing Effects?**

Macroeconomic studies provide highly aggregated estimates of the impact of HIV/AIDS on economic growth. The findings range from zero to -6 percentage points (Cuddington 1993; Over 1992; Bloom and Mahal 1997; Arndt and Lewis 2000; Bonnel 2000).

<table>
<thead>
<tr>
<th>Study/Author</th>
<th>Country</th>
<th>Effect on GDP growth (% points)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arndt and Lewis (2000)</td>
<td>South Africa</td>
<td>-0.8 to -1.0</td>
</tr>
<tr>
<td>Bloom and Mahal (1995)</td>
<td>Multiple countries</td>
<td>0</td>
</tr>
<tr>
<td>Bonnel (2000)</td>
<td>47 countries</td>
<td>-0.7 (per capita)</td>
</tr>
<tr>
<td>Kambou et al. (1992)</td>
<td>Cameroon</td>
<td>-0.5 to -1.2</td>
</tr>
<tr>
<td>Loewenson and Whiteside (2001)</td>
<td>Southern African countries</td>
<td>-1.0 to -2.0 (per capita)</td>
</tr>
<tr>
<td>Center for International economics (2002)</td>
<td>Papua New Guinea</td>
<td>-6.8% (over 20 year period)</td>
</tr>
<tr>
<td>Nicholls et al. (2000)</td>
<td>Caribbean region</td>
<td>-4.2 to -6.4(^6)</td>
</tr>
<tr>
<td>Over (1992)</td>
<td>30 countries</td>
<td>-0.3 to -0.6</td>
</tr>
<tr>
<td>Sackey and Raparla (2000)</td>
<td>Botswana, Lesotho and Namibia</td>
<td>-1.0 to -1.5</td>
</tr>
</tbody>
</table>

Source: Adapted from Bell et al. (2003: 7), UNFPA (2003: 52).

These estimates are based on assumptions of the various channels by which HIV/AIDS exerts its influence on households, firms and government. The key channels of influence are: skills availability, savings, demand patterns and productivity (Arndt and Lewis 2000: 857). On the one hand the impact increases per capita income because HIV/AIDS-related mortality and reduced life expectancy reduce the population pressure on land and capital, and contributes to a decrease in labor force growth.

On the other hand the impact decreases per capita income. This is because the increased HIV/AIDS-related medical expenses result in a reallocation of household expenditures away from savings\(^7\) – this fall in domestic savings translates into reduced investment (because domestic saving is the most important source investment of many developing countries). Furthermore, increased government spending on healthcare is financed from savings. The result is decreased capital stock and decreased economic output.

Because of the two sets of countervailing factors, it is not possible to say ex ante what the macroeconomic impact of HIV/AIDS is, and the exact impact becomes an empirical question. Empirical studies have produced conflicting evidence on the impact of HIV/AIDS on per capita income. Some studies found no impact (for example, Bloom and Mahal 1995) while others report a

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\(^6\) Jamaica: -6.4 percent and Trinidad and Tobago: -4.2 percent (Theodore and La Foucade 2001).

\(^7\) In fact, Bonnel (2000) showed an inverse relationship between domestic savings rate and HIV prevalence rate.
modest impact on economic growth of between -0.3 and -1.5 percentage points (Arndt and Lewis 2000; Bonnel 2000; Kambou et al. 1992; Over 1992; Sackey and Raparla 2000).

Impact of HIV/AIDS on Development in Viet Nam

In most of these countries where the impact on economic growth has been studied HIV prevalence was in excess of 10 percent and the impact of HIV/AIDS has been between zero and six percentage points. Given the current HIV prevalence of less than a half percent in Viet Nam, it is unlikely that HIV/AIDS will have a significant impact on economic growth. The future impact will depend on how the epidemic spreads in Viet Nam. A further factor that reduces the likely impact of HIV on growth in Viet Nam is that it is concentrated among intravenous drug users. While not all drug users are economically inactive, the particular pattern of HIV/AIDS in Viet Nam — compared to other countries where there is a predominant sex worker driven epidemic — reduces the likely impact of HIV/AIDS on economic growth.

However, the impact of AIDS on economic growth is not the only way in which AIDS impacts on any society. Bell et al. (2003) argue that the macroeconomic impact of HIV/AIDS has been understated to date because the long run impact of HIV/AIDS on human capital formation, a key driver of economic growth, has not been fully assessed. By causing premature death HIV/AIDS selectively destroys the human capital progressively built up in young adults through investments in child-rearing, formal and informal education and training (Bell et al. 2003). Another channel of influence is to weaken the mechanisms whereby human capital formation takes place. When a parent dies the transmission of knowledge and expertise across generations is disrupted (Bell et al. 2003). The long-term effects will depend on whether the gap left by parents can be filled by substitute caregivers – which is more likely in countries experiencing lower levels of the HIV/AIDS epidemic as is the case in Viet Nam.

This does not mean that there is no economic impact in Viet Nam. Internationally, attention has increasingly focused on the micro-economic impact of HIV/AIDS. There is clear theoretical and empirical evidence of the negative direct and indirect impacts of HIV/AIDS at the household level (Bachman and Booyse 2003; Bell et al. 2003; Chong 1999; Donahue 1998; Greener 2000; Lundberg et al. 2000; Pitayanon et al. 1994; Roy et al. 2000). In fact, the impact of HIV/AIDS on poverty and inequality is one of the most significant macro-level impacts of the epidemic (Greener 2000). Whether these negative impacts affect sufficient numbers of households in order for the impact to be demonstrated at the macro-level will depend on the rate at which overall HIV prevalence increases in Viet Nam.

The development impact of HIV/AIDS has increasingly been stressed in the literature. This is in part because HIV/AIDS impacts negatively on life
expectancy, a major component of the Human Development Index. Another line of argument is the inter-generational impact of HIV/AIDS on human capital formation, a key driver of economic growth (Bell et al. 2003). Furthermore, the impact of HIV/AIDS on household vulnerability and its associated impact on physical and human capital investments by households are also of particular importance. The long run consequences of households' risk-mitigating actions when faced with an economic shock such as HIV/AIDS caused some authors to conclude that the pace of growth and path of development is significantly affected (Over et al. 1996; Lundberg et al. 2000: 950).

The development impact of HIV/AIDS potentially detracts from the achievement of selected MDGs. The MDGs that have direct linkages with HIV/AIDS are listed in Table 2. The particular impact of HIV/AIDS on the first MDG, the eradication of extreme poverty, is explored in the next section.

Table 2: MDGs with direct links to HIV/AIDS

<table>
<thead>
<tr>
<th>Millennium Development Goals with links to HIV/AIDS</th>
</tr>
</thead>
<tbody>
<tr>
<td>MDG#1: Eradicate extreme poverty and hunger</td>
</tr>
<tr>
<td>MDG#2: Achieve universal primary education</td>
</tr>
<tr>
<td>MDG#3: Promote gender equality and empower women</td>
</tr>
<tr>
<td>MDG#4: Reduce child mortality.</td>
</tr>
<tr>
<td>MDG#6: Combat HIV/AIDS, malaria, and other diseases</td>
</tr>
<tr>
<td>MDG#8: Develop a global partnership for development</td>
</tr>
</tbody>
</table>

In fact, life expectancy accounts for about a third of the HDI (Chong 1999).

In 2001 Viet Nam, alongside 188 countries, adopted the Millennium Declaration which embodies eight development goals. Viet Nam has already met one of the MDGs – to halve poverty by 2015 Viet Nam has reduced poverty levels from over 75 percent in 1990 to 58 percent in 1993 to 37 percent in 1998. Food poverty rates have declined from over 30 percent to about 15 percent in 2000 (United Nations Country Team Viet Nam 2002: 4).
PART III: HEALTH, POVERTY AND HIV/AIDS
Impact of Poverty on HIV/AIDS

The relationship between economic development and vulnerability to HIV is characterized by a complex interplay of economic forces. Micro-level data suggest that early in the epidemic the non-poor appear to be more vulnerable for the reasons described in the previous section. However, with time, the non-poor learn to protect themselves and reduce risk-taking behavior while the poor and less educated remain vulnerable. It is therefore not surprising that as the epidemic matures, HIV/AIDS becomes increasingly concentrated among the poor (Bloom et al. 2002).

Box 1: Poverty and low education predispose to risk taking behavior

Household data show a strong correlation between wealth and education on the one hand and AIDS-related risk factors suggesting that poverty and low education predispose to risk taking behavior. (Bloom et al. 2001: 3, 14).

Summary of results for Viet Nam:
The results in the table below show that individuals in the wealthiest quintile (compared to those with lower income) are more than two times more likely to be aware of the HIV preventive benefits of using a condom, to have knowledge of the HIV preventive benefits of avoiding sex with sex workers, to know of a source for condoms and to have knowledge of the use of condoms. There was no difference between knowledge of the HIV preventive benefits of having just one sexual partner between high and lower income individuals. Individuals with tertiary education (compared to those with less than tertiary education) are more than six times more likely to be aware of the HIV preventive benefits of using a condom, are four times more likely to have knowledge of HIV preventive benefits of having just one sexual partner, are 34 times more likely to know of a source for condoms and 26 times more likely to have knowledge of the use of condoms. There was no difference between knowledge of the HIV preventive benefits of avoiding sex with a sex worker between higher and lower educated individuals.

<table>
<thead>
<tr>
<th></th>
<th>Wealthiest Quintile Odds ratios</th>
<th>Highest Education Odds ratios</th>
</tr>
</thead>
<tbody>
<tr>
<td>Uses of condoms during sex</td>
<td>2.684**</td>
<td>6.455**</td>
</tr>
<tr>
<td>Has only 1 sex partner</td>
<td>1.959</td>
<td>4.144**</td>
</tr>
<tr>
<td>Avoids sex with sex workers</td>
<td>2.233***</td>
<td>0.967</td>
</tr>
<tr>
<td>Knows source of condoms</td>
<td>2.175**</td>
<td>34.132***</td>
</tr>
<tr>
<td>Has knowledge of condoms</td>
<td>2.504**</td>
<td>26.72***</td>
</tr>
</tbody>
</table>


These findings are consistent with similar analyses for Cambodia, Viet Nam, Nicaragua and Tanzania. Education and wealth seem to produce better knowledge of HIV preventive benefits of having just one sexual partner in the four countries but results are statistically significant only in Viet Nam and Nicaragua for education, and Tanzania for wealth. Education does not produce better knowledge of HIV preventive benefits of avoiding sex with sex workers in any of the four countries. Wealth has a mixed effect. It produces better knowledge of HIV preventive benefits of avoiding sex with sex workers in Viet Nam and Nicaragua, less awareness of these benefits in Cambodia, and the same awareness of these benefits in Tanzania. Education and wealth both have very powerful beneficial effect on knowing a source for condoms in all four countries. Education and wealth both have very powerful beneficial effects on knowing a source for condoms in all four countries.

Impact of HIV/AIDS on Poverty

Because increased health expenditure is a main driver of the HIV/AIDS-related expenditure effects key insights can be gleaned about the poverty impact of HIV/AIDS-related health expenditures by understanding the relationship between household health expenditures and poverty. This
The chapter starts by looking at the impact of health spending on household welfare and uses this information to better understand the impact of HIV/AIDS-related effects on the household.

The Health-Poverty Nexus

Aside from the value of good health in its own right, health matters because it is an asset. The health of the poor matters especially because the poor have fewer assets and ill health among the poor limits the already constrained asset base of the poor (Wagstaff 2001). An illness or death in a poor household can therefore have a devastating impact on household welfare. Serious illness of an economically active adult is one of the most common and devastating shocks that households face in Viet Nam (United Nations Country Team Viet Nam 2002: 6). Table 3 shows the most frequently cited crises identified in the participatory poverty assessments in Viet Nam. Illness was the cause identified in more than half (57 percent) of households whose standard of living had declined (Action Aid 1999). Poor households are three times more likely to lose production and income due to non-working days associated with illness compared to households in the richest quintile (World Bank/Poverty Working Group 2000: 95; 2002: 6).\(^{10}\) The consequence is what has been described as the “medical poverty trap” (Dahlgren 2002), because households suffer the effects of increased health spending and reduced income associated with illness.

In most countries the magnitude of the poverty impact of household health expenditures has been found to be small (Wagstaff 2001). But, Viet Nam is an exception. The proportion of household expenditure spent on healthcare in Viet Nam is among the highest globally (Wagstaff 2001: 40). The benchmark of 5 percent of household income is often used to assess the affordability of healthcare costs. In Viet Nam a third of households spend more than 5 percent of their income on healthcare costs (Wagstaff and van Doorslaer 2003).\(^{11}\)

\(^{10}\) Poor households lose 25 percent of annual per capita household expenditure, in terms of foregone earnings, compared to 7 percent among households in the highest consumption quintile (World Bank/Poverty Working Group 2000: 95; 2002: 6).

\(^{11}\) On average, households spend 13.1 percent of total non-food expenditure on healthcare, ranging from 15.1 percent to 9.8 percent for the poorest and richest quintiles respectively (VLSS 1997/98). There is large variation in this percentage, and that across all quintiles non-trivial numbers of households spend in excess of 50 percent of non-food income on healthcare.
Table 3: Most frequently cited crises in poverty assessments

<table>
<thead>
<tr>
<th>Type of crisis</th>
<th>Effect</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Human Crisis</strong></td>
<td></td>
</tr>
<tr>
<td>Illness</td>
<td>High direct and indirect treatment costs and loss of income through reduced labor.</td>
</tr>
<tr>
<td>Death of a laborer</td>
<td>High costs of funeral expenses and loss of income from labor loss.</td>
</tr>
<tr>
<td>Alcoholism, drug addiction and gambling</td>
<td>High expenditure, reduced income from lost labor.</td>
</tr>
<tr>
<td><strong>Material crisis</strong></td>
<td></td>
</tr>
<tr>
<td>Theft</td>
<td>Loss of assets; reduced income.</td>
</tr>
<tr>
<td>Damage to housing (weather, fire)</td>
<td>High, unexpected expenditure.</td>
</tr>
<tr>
<td><strong>Non-crop economic shock</strong></td>
<td></td>
</tr>
<tr>
<td>Failure of investment</td>
<td>Reduced income; inability to repay debts</td>
</tr>
<tr>
<td>Unemployment</td>
<td>Reduced income</td>
</tr>
<tr>
<td>Death of animals/animal epidemic</td>
<td>Reduced income; reduced assets and security</td>
</tr>
<tr>
<td><strong>Crop failure</strong></td>
<td></td>
</tr>
<tr>
<td>Crop loss: rate/mice and other pests</td>
<td>Reduced income; inability to repay debts</td>
</tr>
<tr>
<td>Crop loss: landslide</td>
<td>Reduced income</td>
</tr>
<tr>
<td>Crop loss: weather (floods, droughts, typhoons, storms, high winds)</td>
<td>Reduced income; reduced assets and security</td>
</tr>
</tbody>
</table>


Furthermore, the burden of out-of-pocket payments, measured in terms of ability-to-pay (i.e., as a percentage of non-food consumption) is more concentrated among the poor\(^\text{12}\) (Wagstaff and van Doorslaer 2001: 24). For example, among those households reporting illness, a curative treatment episode that involves hospitalization costs equivalent to 22 percent of annual non-food expenditure for a household in the poorest quintile, compared to 8 percent for a household in the richest quintile (Segall et al. 2000; World Bank/Poverty Working Group 2002: 6).\(^\text{13}\)

What is the impact of health expenditures on poverty? Figure 2 uses the Viet Nam Living Standards Survey (VLSS)\(^\text{14}\) 1997/98 dataset to show the potential impact of household out-of-pocket health expenditure on extreme poverty (i.e., using the food poverty line).\(^\text{15}\)

\(^\text{12}\) While the incidence of catastrophic healthcare payments is concentrated among the poor in Viet Nam, the incidence among the poor has decreased between 1993 and 1998 (Wagstaff and van Doorslaer 2001: 24).

\(^\text{13}\) For ambulatory care the incidence is 17 percent of the income of the poorest quintile and 5 percent among the richest quintile (Segall et al. 2000). Even a commune healthcare visit, which is supposed to be free of charge can cost up to 4 percent of annual non-food expenditure for the poorest quintile and less than 1 percent for the richest quintile (World Bank/Poverty Working Group 2000: 95).

\(^\text{14}\) The Viet Nam Living Standards Survey is an income and expenditure survey of a representative sample of households in Viet Nam using standardized methodology of the World Bank Living Standards Surveys. In 1993 and 1998 the sample size was 4,800 and 6,000, respectively. In 2002 the Viet Nam Household Living Standards (VHLS) survey conducted and fully produced by the General Statistical Office using a sample of 30,000 households.

\(^\text{15}\) Using the 1998 definition of the poverty line of VND1,287 thousand.
In some instances health expenditure is large enough to cause previously non-poor households to fall below the food poverty line. In other instances poverty is deepened among previously poor households. A comparison of these two poverty indicators, before and after out-of-pocket payments provides an indication of the impoverishment caused by out-of-pocket payments (Figure 2).

In a multi-country study, Viet Nam had the largest change in poverty headcount ratio when before and after out-of-pocket health spending was compared (Figure 7). The poverty headcount ratio increased from 34 to 38 percent (Wagstaff and van Doorslaer 2001). While this increase by 4 percentage points may appear to be small, this translates into 3.0 million people (World Bank/Poverty Working Group 2003: 61). More than 80 percent of this increase was attributable to deepening poverty among households that were already poor before considering out-of-pocket payments (Wagstaff and van Doorslaer 2001). The results were even more stark when the extreme poverty headcount ratio was used.17

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16 The poverty gap index is expressed as a ratio to the poverty line and is the product of the health count index and the average positive difference between the poverty line and a poor person’s income (Knowles et al. 2003: 114).
17 After out-of-pocket healthcare payments, the extreme poverty headcount increased from 15.0 percent to 18.4 percent (in 1998). Three quarters of this increase was due to households falling further below the food poverty line, and the remaining 26 percent were households who were not previously in extreme poverty (Wagstaff and van Doorslaer 2001: 41).
Figure 3: Impact of out-of-pocket payments on poverty headcount

Household Vulnerability

The likelihood that increased health expenditure will result in poverty depends on the vulnerability of households. Vulnerable households can be viewed as those who are currently poor and those who are near-poor. A large proportion of households in Viet Nam are clustered around the poverty lines and nearly half (47 percent) of the population can be described as vulnerable (World Bank/Poverty Working Group 2002: 4). Given this distribution, even small economic shocks may force a large number of households into poverty or deeper below the poverty line.

In Viet Nam various vulnerable groups are identified (see Box 2). The identification of vulnerable groups is helpful, but it is more important to focus on the risks that make people vulnerable. One example of such a risk is HIV/AIDS.

Box 2: Vulnerability in Viet Nam

In Viet Nam vulnerability has been described as the "inability of an individual, to exploit opportunities presented by society for their self-betterment" (World Bank/Poverty Working Group 2002: 4). Two groups are identified by the Ministry of Labor, War Invalids and Social Affairs (MOLISA): those of working and capable of working (e.g., invalids capable of work, female laborers who have not yet completed primary school, young laborers (15-24 years old) who have not yet completed secondary school) and those under or over the working age or of working age but incapable of work (e.g., invalids incapable of work, elderly without relatives, orphans and helpless children) (World Bank/Poverty Working Group 2002: 3).

The following vulnerability targets have been identified for Viet Nam: (1) to increase the distance between average and poverty line consumption levels; (2) to stabilize the rate of downward consumption volatility measured as a decline in consumption by 2 or more quintiles; and (3) to stabilize and improve consumption of the poor measured as consumption declining below the food poverty line (World Bank/Poverty Working Group 2002).

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18 The near-poor are defined as those households who fall within a line 10 percent above the poverty line (defining the poverty line at VND1,790 thousand).
Expenditure and Income Effects of HIV/AIDS

The theoretical framework in Appendix C shows the potential for increased vulnerability due to HIV/AIDS-related expenditure effects and income effects. The magnitude of these effects is analyzed using various data sources as described in the methodology in Appendix C. Figure 4 shows the expenditure and income effects associated with HIV/AIDS. These effects may be positive or negative.

Expenditure Effects

As with any terminal illness, a person with HIV/AIDS makes much more extensive use of medical services before death. The specific healthcare needs depend on the stage of illness, as Figure 4 demonstrates. Household spending on HIV/AIDS-related healthcare is much higher than on other illnesses, including terminal illnesses (World Bank 1997). In addition to health spending, a further expenditure effect associated with HIV/AIDS is funeral expenditure. An example of a positive expenditure effect is the reduced household consumption expenditure needs when the PLWHA dies.

Income Effects

There are two main channels of influence: (1) fewer hours worked because a breadwinner has to care for the PLWHA; and (2) inactivity or unemployment (or fewer hours worked or lower productivity of, for example, a self employed farmer) by the PLWHA due to illness or stigma and discrimination. The timing of the loss of income by a PLWHA will depend on whether the PLWHA was employed or not. If employed, the impact will also depend on the level of discrimination and legal protection against such discrimination. The loss of income by the PLWHA has an irreversible effect on the lifetime resources for the household. The income effect on a caregiver is generally reversible because the adult caregiver may resume full-time work.

19 In Viet Nam most of the poor or near-poor are self-employed and/or work in agriculture, so employment-related discrimination may not be a significant impact.
20 How significant are these income effects? By the time of death of the PLWHA the household had lost an equivalent of two years of labor (Rugalema 1998 in UNFPA 2003: 43). Illness of an income-earner caused household income to decrease, on average, by 83 percent (Pitayanon et al. 1994 in UNFPA 2003: 47). After the death of an income-earner, households took between 2-3 years to recover from the lost income and regain its income security (Lundberg et al. 2000).
Figure 4: HIV/AIDS-related income and expenditure effects

Person with HIV

Symptomatic

AIDS

Deceased

Asymptomatic

No AIDS

Alive

Expenditure effects
- Costs of testing and diagnosis (negative).

Income Effects
- No income effects except where job-loss is due to workplace stigma and discrimination (negative).

Expenditure effects
- Costs of care and treatment of opportunistic infections (negative).

Income Effects
- Loss of income by PLWHA if employed (formally or informally) prior to onset of symptoms (negative). Onset of income effects dependent on workplace stigma and discrimination.

Expenditure effects
- Costs of care and treatment of opportunistic infections (negative).
- Laboratory costs and drug costs of ARV treatment where utilized (negative).

Income Effects
- Loss of income by PLWHA if employed (formally or informally) prior to illness (negative). Timing of onset of income effects dependent on workplace stigma and discrimination, and whether. Onset of income effects may be delayed if ARVs are used.
- Loss of income by caregivers who work less hours because of caregiving activities (negative).

Expenditure Effects
- Funeral expenditure (negative).
- No consumption expenditure devoted to PLWHA who has died (positive).

Income Effects
- Loss of income of PLWHA if employed (formally or informally) prior to illness (negative).
- Caregivers who have reduced working hours to resume working (positive). Ability of caregivers to resume work depends on labor market conditions.
Case Study of the Household Impact of HIV/AIDS in Viet Nam: Key Findings

Information on healthcare expenditure by households with a PLWHA was collected in the Household Impact Case Study. The approach and methodology of the case study are described in detail in Technical Annex IV. Key results are presented and discussed below.

Health Expenditure

The average per capita out-of-pocket healthcare expenditure per living PLWHA found in this case study was VND2,624 thousand (US$172) (Table 4). This is twelve times greater than the annual per capita health expenditure reported in the 2001-2002 Viet Nam National Health Survey. For a person who had recently died of HIV/AIDS, the expenditure is almost seven times higher than a living PLWHA (Table 4). This reflects the much higher cost of end-stage illness. On average, households in the case study spent VND14,220 thousand (US$931) per year on healthcare, which is between twelve and thirteen times greater than the household health expenditure recorded in the 1998 VLSS.

Funeral Expenditure

The case study revealed that families tended to bury those who had died of HIV/AIDS soon after death and did not organize large funeral ceremonies, the usual practice in Viet Nam. The reported funeral expenditure (VND3,380 thousand; US$221) is not a trivial amount, especially for households who have exhausted their resources after paying for medical care of the PLWHA before death. It is notable that the funeral expenditure for a male who had died of HIV/AIDS was almost twice as much spent for a female PLWHA who had died.

Loss of Income by PLWHAs

Of the sample of PLWHAs surveyed, more than a third were employed or were working at the time of death. Given the informal nature of the economy of Viet Nam, most people are self-employed in agriculture, in small-scale family-based production or in service enterprises. The impact of job-loss can therefore be averted far into the illness. Half of study subjects who were

Table 4: Healthcare expenditure per PLWHA and per household

<table>
<thead>
<tr>
<th></th>
<th>Annualized total household health expenditure (households with a PLWHA)</th>
<th>Annualized healthcare expenditure per PLWHA who has died</th>
<th>Annualized healthcare expenditure per PLWHA who is alive</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>VND thousand</td>
<td>US$</td>
<td>VND thousand</td>
</tr>
<tr>
<td></td>
<td>14,220</td>
<td>931</td>
<td>18,112</td>
</tr>
</tbody>
</table>
employed reported losing their job as the result of being HIV positive. Respondents reported job-loss largely due to being too weak to work, most likely related to the fact that people discover their HIV status very late in the illness. Among those who reported lossoing income due to HIV status, the mean annualized reduction in earning per PLWHA was VND7,416 thousand (US$480).

**Loss of Income by Caregivers**

Three quarters of PLWHAs interviewed required the assistance of a caregiver. In some instances several household members were needed as caregivers and the average number of caregivers per PLWHA was therefore approximately 1 per PLWHA. The case study found that, on average, a caregiver spent nearly 5 hours a day caring for the PLWHA.

**Figure 5: People who give care to PLWHAs**

On whom does the burden of care fall in the household? As Figure 5 shows, in most cases (73.2 percent), the responsibility fell on the women in the family. 21 Mothers accounted for half of the caregivers. This may be unique to Viet Nam because link between AIDS and IDU in the country. The second most cited person was the wife (15.5 percent), followed by the father (10.3 percent), and the sister of the PLWHA (6.8 percent). It is interesting that children, both daughters and sons, were not found to be the main caregivers in this case study. 22

A quarter of caregivers reported having to give up a job in order to spend time with the infected person. The annualized income of these caregivers who gave up their employment was VND5,856 thousand (US$396). In addition, just over a third (36.2 percent) of caregivers experienced income reduction due to reduced hours worked – amounting to an annualized average of VND5,736 thousand (US$382) per caregiver. On the other hand, more than half of caregivers said they did not have to take any day off from work to care for the sick people.

The net impact of the expenditure and income effects may be reversible or irreversible. The extent to which a household manages risk to avoid transition to the irreversible consequences depends on the success of risk reduction activities and the economic resources available to the household. The main

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21 This is in part related to the fact that the majority of PLWHA in Viet Nam and in this case study were male.

22 However, it is important to note that nearly half of the PLWHA have not been married, hence have not had children.
examples of the latter are: land, labor, capital/assets and entrepreneurship (Donahue 1989). Another key determinant of this transition is the level of community assistance. These themes will be explored next.

**Coping Strategies**

Table 5 lists the different household coping strategies adopted to cope with HIV/AIDS-related loss of income (by PLWHA or caregiver) as identified in the Household Impact Case Study. These are not very different from the coping strategies for households experiencing any other economic shock. Borrowing money was the most common form of coping, followed by reducing food and healthcare consumption, as well as the sale of assets. In the case study it was found that in many instances the elderly in the household had to generate income to make up for the lost income which could have been earned by a working-aged PLWHA.

When asked about the sources of money to pay for medical expenses of the PLWHA, only a third (35.7 percent) of households indicated they could pay in full from family savings. Just over a tenth of households (13.9 percent) received fee exemption or fee reduction from health facilities. Borrowing and decreased consumption expenditure remained the most common strategies to cope with increased health expenditures.

**Table 5: Household coping with loss of income**

<table>
<thead>
<tr>
<th>Coping strategies</th>
<th>Proportion of households with PLWHAs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Borrow money from friends and relatives</td>
<td>36.0%</td>
</tr>
<tr>
<td>Cutting down on food consumption</td>
<td>28.8%</td>
</tr>
<tr>
<td>Borrow money with interest</td>
<td>27.2%</td>
</tr>
<tr>
<td>Decreasing health expenditure of other household members</td>
<td>25.6%</td>
</tr>
<tr>
<td>Selling assets, including production means</td>
<td>20.8%</td>
</tr>
<tr>
<td>Elderly going out for earned job</td>
<td>17.6%</td>
</tr>
<tr>
<td>Selling land/house</td>
<td>5.6%</td>
</tr>
<tr>
<td>Children being taken from school</td>
<td>3.2%</td>
</tr>
<tr>
<td>Children being sent out for income generating job</td>
<td>2.4%</td>
</tr>
<tr>
<td>Sending children away for foster care</td>
<td>1.6%</td>
</tr>
<tr>
<td>Receive loan from credit programs</td>
<td>1.6%</td>
</tr>
</tbody>
</table>

Source: Household Impact Case Study.

These findings are consistent with the findings from the Viet Nam Health Financing Survey which concluded that households in the poorest quintiles rely more on borrowing than saving and support from relatives compared to households from higher quintiles (Table 6).

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Examples of coping strategies in response to an economic shock in Viet Nam that have been identified in participatory poverty assessments and various quantitative and qualitative surveys are: (1) borrowing rice or money from relatives, friends, neighbors or moneylenders; (2) increasing household labor inputs; (3) reducing consumption expenditure; (4) selling assets; (5) migration and household dissolution; (6) increased use of common property resources; (7) receipt of gifts and (8) social capital (World Bank/Poverty Working Group 2002: 17). Newly formed households are particularly vulnerable because there are fewer working adults in the household. Borrowing money as well as selling of land or other productive assets may lead to a debt trap (World Bank/Poverty Working Group 2000: 95).
The Household Case Study found that more than 90 percent of the households that had an HIV/AIDS-related death reported receiving support (cash or in-kind) when the PLWHA died. Contributions from neighbors and relatives to the funeral expenses were the most common form of support. The contribution from attendees was usually smaller than other funeral ceremonies because of the smaller funerals. The average amount of assistance received by households was VND2,500 thousand (US$164). This is 74 percent of the average funeral expenditure reported earlier.

Table 6: Sources used to finance healthcare (2001-2002)

<table>
<thead>
<tr>
<th>Source</th>
<th>Q1</th>
<th>Q2</th>
<th>Q3</th>
<th>Q4</th>
<th>Q5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Savings</td>
<td>43.0%</td>
<td>51.7%</td>
<td>62.5%</td>
<td>72.5%</td>
<td>86.7%</td>
</tr>
<tr>
<td>Borrowing</td>
<td>46.0%</td>
<td>39.0%</td>
<td>29.5%</td>
<td>19.9%</td>
<td>9.2%</td>
</tr>
<tr>
<td>Selling agricultural products</td>
<td>8.0%</td>
<td>6.0%</td>
<td>4.5%</td>
<td>2.7%</td>
<td>1.5%</td>
</tr>
<tr>
<td>Selling assets</td>
<td>60.0%</td>
<td>0.3%</td>
<td>0.2%</td>
<td>0.0%</td>
<td>0.2%</td>
</tr>
<tr>
<td>Reducing other expenditures</td>
<td>0.0%</td>
<td>0.1%</td>
<td>0.1%</td>
<td>0.0%</td>
<td>0.0%</td>
</tr>
<tr>
<td>Support from relatives, friends</td>
<td>2.0%</td>
<td>2.7%</td>
<td>3.1%</td>
<td>4.8%</td>
<td>2.5%</td>
</tr>
<tr>
<td>Other sources</td>
<td>0.3%</td>
<td>0.2%</td>
<td>0.1%</td>
<td>4.8%</td>
<td>2.5%</td>
</tr>
<tr>
<td>Total</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
</tr>
</tbody>
</table>


Sixty percent of households with a household member that died of HIV/AIDS reported having difficulty with paying for basic services such as food, education, healthcare, electricity and transport. The recovery time after the death of the person with HIV/AIDS took up to 25 months. This shows that while households are generally resilient, there were some cases where the direct impact of death lasted very long. However, this recovery time does not take into account the indirect impact of reduced food and education expenditure in the form on malnutrition and lower education achievement in the long run. The opportunity costs are therefore not fully reflected in this estimated recover time. The recovery time is likely to increase as diagnosis takes place earlier in the illness progression and the resultant increase in cumulative healthcare costs by a person with AIDS.

In addition to the informal mechanisms of support, the formal support available to households with PLWHAs is of interest. The two examples of

![Figure 6: Types of support most wanted by the households](image-url)
formal support encountered in the case study were: (1) the health care card\textsuperscript{24} and (2) free drugs for the PLWHA. Many households expressed great appreciation with the free drugs provided by the local commune health center. In most instances the drugs were simply vitamins but for households the fact that the PLWHA was not turned away represented some degree of psychological support. The fact that PLWHA come to community health center to receive drugs occasionally (in Ho Chi Minh City) or every month (in An Giang) fostered regular contact to health professionals and facilitated counseling and the exchange of information between the patient and health professional.

The case study also inquired about the kind of support households would want the most in the following 12 months (Figure 7). The biggest concern was healthcare for the HIV positive household member – specifically, in the form of access to drugs and treatment at hospitals. In addition, most households expressed the need for financial assistance.

\textit{Impacts}

The initial decrease in food expenditure is likely to have minimal impact on nutritional status because it involves switching to cheaper food products. Similarly, the initial decrease in education expenditure may not affect children’s school attendance as non-essential school-related expenditures are decreased. This can be thought of as the reversible and minimal impact stage. There is, however, a point beyond which the increased health expenditure results in reduced consumption expenditure\textsuperscript{25} in a way that impacts negatively on school attendance and nutritional status.

Care-giving activities may be performed by an older child or an adult. The household is likely to compare the loss in income due to reduced hours worked by the adult with the foregone future earnings associated with withdrawal of a child from school. Because the earning capacity of a girl-child is generally viewed to be less than a boy-child, girls are more likely to be withdrawn from school.\textsuperscript{26} If there is an unemployed or under-employed adult in the household, the decision to withdraw a child may be delayed or avoided (depending on the willingness of the adult to take on care-giving responsibilities and the education expenditure associated with keeping a child in school).\textsuperscript{27}

\textsuperscript{24} It was not clear that the health care card was given specifically because of the PLWHA in the household or because the household was poor to start off with. Although a question was included in the questionnaire to ascertain this, it was not possible to distinguish analytically. There were however instances where households reported having a health care card previously, but the card had been revoked and granted to other households in the community which were also poor. There appears to be a distinction between more and less deserving poor people and some stigmatization of households with a PLWHA. This is however subject to verification.

\textsuperscript{25} In Thailand it was found that over half of households with a PLWHA reduced their non-medical expenses by over 40 percent whereas 60 percent of households used all their savings to pay for medical care Pitayanon et al. (1994).

\textsuperscript{26} There is extensive evidence that children in HIV/AIDS-affected households are more likely to be withdrawn from school than non-affected households (Kelly 2000; UNFPA 2003: 42; Martin 2003).\textsuperscript{28} A study in India (Maharashtra) also found that children in an HIV/AIDS-affected household were less likely to attend school (and less likely to have access to healthcare services) (Verma 2002 in UNFPA 2003: 48).

\textsuperscript{27} In Viet Nam, when children reach secondary school, and particularly upper-secondary school, i.e., grades 10-12, schooling becomes quite expensive and they often have to travel long distances or stay with relatives in towns. So
The household therefore moves from the reversible minimal impact stage described earlier, to a reversible and significant impact stage. The latter stage is characterized by decreased school attendance (irregular school attendance and withdrawal) in order to maintain food consumption. The withdrawal of a child may save on current expenditure, but also results in reduced investment in the human capital of that child. This is where the irreversible impact stage starts. During this stage households may weigh the selling of productive assets against withdrawing a child from school.

When faced with a decrease in household resources available for consumption, households engage in various coping strategies. Coping strategies are actions taken once an economic shock has already occurred, as opposed to risk reduction and risk mitigation activities that are taken in advance of a shock to, respectively, reduce the probability of the shock or to reduce the seriousness of the shock. The most important objective of household coping strategies is to maintain a certain level of food consumption (UNAIDS 1999: 17).

The sequence of household responses to a shock is strongly determined by the reversibility of the action – for example, re-allocating labor is preferred to the selling of productive assets (Lundberg et al. 2000: 956). The result is a hierarchy of coping strategies – starting with using savings, selling assets, borrowing money and food, seeking community assistance and support (Donahue 1998; Chong 1999: 40). The three most important sources of financial assistance available to households following a death are: private transfers, private borrowing and institutional assistance (Lundberg et al. 2000: 951). Private transfers are the most important source, but poor households benefit less from private assistance networks and are therefore more likely to borrow and incur debt. Non-poor households have more assets, more savings and greater access to credit (Lundberg et al. 2000) suggesting that non-poor households’ ability to cope is much greater than poor households. However, there is also evidence that non-poor households are more likely to spend larger amounts on catastrophic healthcare (Wagstaff and van Doorslaer 2001), suggesting that non-poor households are also at risk of the devastating effects of HIV/AIDS. The amount of assets, food-stock, savings and access to credit determines the ability of the household to cope with HIV/AIDS-related healthcare expenses, and the rate at which the household moves from reversible to irreversible strategies.

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28 In Tanzania spending on clothing, soap, batteries and other non-food items fell by a third (World Bank 1997 in UNFPA 2003: 47).
29 Donahue (1998) identified three stages of loss management based on reversible and irreversible coping strategies: (1) reversible mechanisms and disposal of self-insuring assets; (2) disposal of productive assets; and (3) destitution.
30 In a Thai study the sale of assets (including productive assets like land, livestock and vehicles) was the response by nearly 20 percent of HIV/AIDS-affected households, and 10 percent of households borrowed money (Pitayanon et al. 1994).
Long term household impact of HIV/IDS: Lost Education Investments

Private and public investments in education are made, in part although not exclusively, so that each child can contribute productively to the economy. For each child that dies prematurely of HIV/AIDS, the returns to investment in education (in terms of expected contribution to the economy) will not be realized. Similarly, at the household-level, the sacrifices and investments that families make come to naught when a child dies prematurely.

The youth are an important component of any rapidly growing economy. At the same time, young people are at the center of the HIV/AIDS epidemic – globally and in Viet Nam evidenced by the decreasing age of new HIV infections. The youth brings together two key risk factors fueling the HIV epidemic: injecting drug use and sexual activity. Behavioral surveillance surveys in Viet Nam suggest that these risk-taking behaviors are increasing. The impact of HIV/AIDS on the youth is thus an important aspect of the assessment of the socio-economic impact of HIV/AIDS in Viet Nam.

Given the stage of the demographic transition in Viet Nam and the fact that Viet Nam has reached replacement level of population growth, the current cohort of youth is the largest cohort ever. More than two decades into the epidemic, the vast majority of young people remain uninformed about sex and sexually transmitted infections. Although a majority have heard of AIDS, many do not know how HIV is transmitted and do not believe they are at risk. Those young people who have knowledge about HIV often do not protect themselves because they lack the life skills, the support services or the means to adopt safe behaviors. Nonetheless, young people have demonstrated that they are capable of making responsible choices to protect themselves when provided such support, and that they can educate and motivate others to make safe choices (Tung 2003).

The expected returns to the economy anticipated from investments into education are not realized when young people die from HIV/AIDS. The contribution of local resources (local government and households) to education investment has been increasing over recent years. If one considers that more than one third of these investments are borne by individual households then the amount represents a substantial burden – in terms of lost investments – to households when an adolescent dies of HIV/AIDS. These losses will increase accordingly as the number of youth with HIV/AIDS and AIDS-related deaths among youth increase.

The convergence of the income and expenditure effects identified in the previous chapter, and the unrealized education investments made by

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31 Another long run education-related impact of HIV/AIDS has also been identified in the literature. A long run impact identified by Bell et al. (2003) is that the income and expenditure effects of HIV/AIDS on the household also reduce the lifetime resources available to a family, impacting negatively, for example, on education. Parents make allocation decisions between consumption in the present and investment in human capital accumulation of their children. If the probability that a child may be infected in adolescence or adulthood rises substantially, parents may under-invest in education in expectation of premature death. However, given the current incidence levels in Viet Nam, this consequence is not immediate.

32 Individuals under 30 years of age represent 64 percent of HIV infections in Viet Nam (MOH 2003a). PLWHAs aged 20-29 years constitute an increasing proportion of HIV infections in Viet Nam. This proportion increased from a low of 15.0 percent in 1993 to a high of 53.8 percent of HIV infections in 2003 (MOH 2003a; Tran Hien 2003).
households identified here, suggests that households of PLWHAs are presently bearing the brunt of the epidemic.

Simulation of the Impact of HIV/AIDS on Household Consumption Expenditure

The impact of HIV/AIDS-related health expenditure on household well-being in Viet Nam was modeled using the information gathered in the Household Impact Case study (see Technical Annex II for methodological details). Figure 7, Figure 8, and Figure 9 show the results of the modeling of the expenditure and income effects of HIV/AIDS on households with a PLWHA.

The reasonableness of the analytic approach and assumptions is discussed in Box 3.

Box 3: How reasonable is the modeling?

The theoretical and analytical framework used in the modeling of the HIV/AIDS-related expenditure and income effects and the impact on poverty in Viet Nam is described in detail in Technical Annex II. The assumptions and key considerations in the modeling were:

- **Expenditure effect**: Only increased health expenditure was considered and not funeral expenditures. In the case study there was considerable variability in the level of funeral expenditures and the level of support from relatives, neighbors and others to assist with funeral expenses (one of the most common forms of assistance identified in the case study). For this reason funeral expenditures were not included in the model. At worst, the effect of this is that the expenditure effect as estimated in the model is a conservative estimate of the true expenditure effect.
  - 500% and 1,000% increase in health expenditure for people with AIDS who are not using ARVs: The impact of a 1,000 percent increase in health spending was simulated. The data from the Household Impact Case Study suggests that households with PLWHAs experience increases in health spending of between 12 and 13 times, i.e., well in excess of 1,000 percent. Therefore, the use a 1,000% increase in the simulation is not only reasonable, but most likely an under-estimate of the true income and expenditure effects.
  - 1,000% and 2000% increase in health expenditure for people with AIDS who are using ARVs: Evidence from other country studies: India where health expenditure by PLWHA on ARVs is 103% higher than PLWHA who are not on ARVs (Palanigounder et al. 2003). This assumption is further supported by information from the Hospital Case Study which quantified the out-of-pocket expenditure of patients using ARVs (see Part III).
  - **Mitigation of expenditure effect**: The analysis of the responsiveness of education and food expenditure to an increase in health spending suggests that responsiveness is elastic and that, in the case of food expenditure, this responsiveness varies across income. (Appendix D: Case Study of the Impact of HIV/AIDS on Hospital Costs)

The Household Impact Case Study revealed that by far the largest burden on households with a PLWHA is increased healthcare costs. This is not surprising given the large out-of-pocket payments for healthcare that households in Viet Nam face. One of the most urgent forms of assistance requested by households of a PLWHA was assistance with healthcare payments and the provision of healthcare for the PLWHA. In order to recommend a policy response to this situation it is critical to know what is the

The results of the modeling of the expenditure and income effects on households with a PLWHA are shown in Figure 7. The impact of these effects was to cause households with a PLWHA to decrease consumption
expenditure by between 37 percent and 48 percent depending on the consumption quintile and whether or not ARVs were used. There was little difference in the proportional impact of HIV/AIDS-related effects on consumption expenditure across consumption quintiles.

**Figure 7: Change in consumption expenditure (2004)**

Households in the forth and fifth quintiles show the largest decrease in per capita consumption expenditure: by 42 percent from if the PLWHA in the household does not use ARVs, and 48 percent if ARVs are used (Figure 7). In the poorest two quintiles per capita consumption falls from by 39 percent (VND565 thousand; US$38) if ARVs are not used, and by 44 percent (VND635 thousand; US$42) (Figure 8).

The consequence of the decrease in consumption expenditure is to put households with a PLWHA at greater risk for poverty. Figure 9 shows the impact of HIV/AIDS on per capita consumption expenditure relative to the poverty lines.

With the exception of households in the richest quintile, all households with a person with AIDS will fall below the (overall) poverty line as a result of the income and expenditure effects of HIV/AIDS. Households with a person with AIDS in the third and forth quintiles will become newly poor, regardless of ARV use (Figure 9). In addition, these effects will cause many households in the poorest two quintiles to fall below the food poverty line – i.e., the most basic food consumption needs (2,100 calories per capita) cannot be met with the resources available for consumption (Figure 9).

---

33 Figure 32 in Technical Annex II shows the upper and lower bound estimates of the change in consumption expenditure.
The difference between those households with a PLWHA using ARVs and not using ARVs is not as large as one would have expected, given the high costs of ARVs. It is however important to note that the expenditure considered in this analysis is the actual spending, not the expenditure that a PLWHA who is on anti-retroviral therapy ought to spend. The case study found that even when PLWHAs are using ARVs, the full treatment regimen is not followed because of demand-side factors such as affordability and supply-side factors determining drug availability. Furthermore, the impact on consumption expenditure is a combination of expenditure and income effects. The income effect is moderated when people have used ARVs because these PLWHAs are able to remain economically active and continue to contribute to household income for longer than when ARVs are not used. The relatively large dependency ratio in Viet Nam (63 percent) leads one to expect that the lost income due to HIV/AIDS will likely be large. The income effect is, however, smaller because of the large proportion of IDUs among PLWHAs, and, the relatively lower contribution of IDUs to household income (Tran Hien 1999; Household Impact Case Study).

Impact of HIV/AIDS on Poverty in Viet Nam

The previous section focused on the household-level impact of the income and expenditure effects. What is the aggregate impact of these household level effects on the overall level of poverty in the country? Box 4 shows Viet Nam’s remarkable poverty reduction achievements in recent years. In fact, Viet Nam has already achieved the first MDG.

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34 Figure 32 in Technical Annex II shows the upper and lower bound estimates of the consumption expenditure after the impact of HIV/AIDS.
Box 4: Poverty and inequality in Viet Nam

While large numbers of people live in poverty, significant gains have been made in reducing poverty in Viet Nam over the past decade Figure 12. In 1990, 75 percent of Vietnamese were poor (International Center for Economics 2003). Poverty rates decreased from 58 percent in 1993 to 29 percent in 2002 (World Bank 2003b: 9)(Figure 12), a decrease of 50 percent. Similarly, 25 percent of households were below the food poverty line and in 2002 this was reduced to 11 percent (World Bank 2003b: 9). The proportion of population living below $1 a day is another poverty measure. Viet Nam has made strides by reducing the proportion of population living below $1 a day from 51 percent in 1993 to 14 percent in 2002 (World Bank 2003b: 15).

Poverty rates were reduced in all regions of the country, north and south, rural and urban. But the urban-rural income differential widened between the two surveys, suggesting that the government’s policies restricting rural to urban migration potentially work counter to poverty reduction. Non-Chinese ethnic minorities experienced much lower reduction in poverty (from 86 percent to 75 percent) than the rest of the population (from 54 percent to 31 percent). Several publications have commented that the easier gains in poverty reduction are over and that further reductions in the poverty rate for Viet Nam will be very challenging even if a robust growth rate is maintained during the new phase of economic growth (Haughton 2001: 14; World Bank/Poverty Working Group 2003: ii). On the other hand, the working aged population is expected to continue to increase over the next few decades. For example, the working-age population will continue to grow in absolute numbers until about 2025, and the working age population as a percentage of the total population will peak earlier (2015) (Knowles 2003a).

The methodology for simulating the impact of HIV/AIDS on poverty is described in detail in Technical Annex II. The poverty impact estimates were based on the official Viet Nam estimates and projections (Viet Nam Technical Working Group on Estimations and Projections 2004). Figure 11 shows the annual impact of HIV/AIDS on poverty between 2004 and 2015 35. It is estimated that by 2004 126,000 people in Viet Nam will either become newly poor or fall deeper into poverty because of HIV/AIDS (Figure 11). This number could potentially increase over the next decade to 504,000 in 2015. Over this period, on average, 36 percent will become newly poor and 64 percent will fall deeper into poverty (Figure 11).

35 The year 2015 was chosen as the endpoint of the projection because the MDG targets are set for 2015.
Figure 11: People affected by the impoverishing effects of HIV/AIDS (2004-2015)

How does this compare with Viet Nam’s poverty reduction achievements to date? Figure 12 summarizes the average annual change in poverty associated with the poverty reduction achievements in Viet Nam since 1993. The poverty headcount ratio decreased at an average annual rate of 3.2 percentage points annually. It is anticipated that HIV/AIDS will slow down poverty reduction efforts between 2004 and 2015 by between 0.1 and 0.2 percentage points annually. The potential impact on poverty reduction between 2004 and 2015 is shown in Figure 12.

Figure 12: Poverty Reduction with and without HIV/AIDS.

The overall impact of an annual average of approximately 176,000 people annually falling into poverty due to HIV/AIDS appears small. However, it is also because the indicator, the poverty headcount ratio, considers only those people who are falling into poverty (i.e., the new poor), not those who are already poor. Nearly two thirds of people touched by the impoverishing effects of HIV/AIDS fall deeper into poverty and are therefore ignored in the indicator.
PART IV: MITIGATING THE HOUSEHOLD IMPACT OF HIV/AIDS
The Health Sector Response to HIV/AIDS

Early in an epidemic the health sector response is mainly in the form of prevention of new infections. As more people become infected the health sector feels the impact of increased demand for health services due to the morbidity and mortality associated with HIV/AIDS. The health sector experiences thus direct impact of HIV/AIDS while other sectors are more likely to experience the indirect consequences of the epidemic. Furthermore, the health sector experiences the effects earlier in the epidemic than any other sector.

Healthcare costs are the largest burden on household consumption expenditure, and was identified as the form of assistance that households with a PLWHA would value the most. How much will it cost for government to assist households with healthcare costs? A better understanding of the costs of care and treatment of HIV/AIDS is critical to inform policy decisions regarding greater sharing of AIDS-related healthcare costs by government. To this end, a second case study — the Hospital Impact Case Study — of the hospital impact and broader health sector impacts of HIV/AIDS was done. The analytical framework, methodological details and results of the case study are provided in Appendix D. The cost information from the case study together with epidemiologic projections was used to provide a preliminary projection of the costs care and treatment of HIV/AIDS in Viet Nam.

The analysis presented here should not be confused with what are the costs of responding to the HIV/AIDS epidemic in Viet Nam. Such an analysis will include the costs of various prevention interventions. Many prevention interventions are outside the health sector, for example behavior change interventions. Many prevention interventions have health sector resource implications, for example, anti-retroviral prophylaxis for the prevention of mother-to-child transmission, counseling and testing, blood screening, safe injections, treatment of sexually transmitted infections etc. However, these interventions are not care and treatment costs and are therefore beyond the ambit of this analysis.

Expenditure on HIV/AIDS in Viet Nam

In 2001 the Ministry of Health released expenditure data on HIV/AIDS prevention, diagnosis, care and treatment for 1996-2000 (Table 7). More than half of HIV/AIDS expenditure was spent on equipment. In-patient treatment services accounted for a tenth of the cumulative HIV/AIDS expenditure over the period.

36 There may be omissions in this financial data, but this information was the best available at the time of compilation of this report.
Table 7: HIV/AIDS-related expenditure by Ministry of Health (1997-2000)

<table>
<thead>
<tr>
<th>Expenditure Item</th>
<th>1997</th>
<th>1998</th>
<th>% change</th>
<th>1999</th>
<th>% change</th>
<th>2000</th>
<th>% change</th>
<th>TOTAL</th>
<th>% of Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>VND billion</td>
<td>VND billion</td>
<td>% change</td>
<td>VND billion</td>
<td>% change</td>
<td>VND billion</td>
<td>% change</td>
<td>VND billion</td>
<td>% of Total</td>
</tr>
<tr>
<td>Equipment</td>
<td>22.4</td>
<td>12.8</td>
<td>-43%</td>
<td>5.9</td>
<td>-54%</td>
<td>16.79</td>
<td>185%</td>
<td>57.89</td>
<td>50.10%</td>
</tr>
<tr>
<td>Blood injection safety</td>
<td>11.55</td>
<td>4.93</td>
<td>-57%</td>
<td>2.24</td>
<td>-55%</td>
<td>4.17</td>
<td>86%</td>
<td>22.87</td>
<td>19.80%</td>
</tr>
<tr>
<td>In-patient treatment</td>
<td>3.49</td>
<td>2.7</td>
<td>-23%</td>
<td>1.31</td>
<td>-51%</td>
<td>4.2</td>
<td>221%</td>
<td>11.7</td>
<td>10.10%</td>
</tr>
<tr>
<td>Monitoring</td>
<td>4.12</td>
<td>3.69</td>
<td>-10%</td>
<td>1.67</td>
<td>-55%</td>
<td>3.69</td>
<td>121%</td>
<td>13.17</td>
<td>11.40%</td>
</tr>
<tr>
<td>STI prevention</td>
<td>1.27</td>
<td>0.64</td>
<td>-50%</td>
<td>0.3</td>
<td>-53%</td>
<td>0.86</td>
<td>187%</td>
<td>3.07</td>
<td>2.70%</td>
</tr>
<tr>
<td>Prevention of mother-child transmission</td>
<td>0.81</td>
<td>0.3</td>
<td>-63%</td>
<td>0.13</td>
<td>-57%</td>
<td>0.5</td>
<td>285%</td>
<td>1.74</td>
<td>1.50%</td>
</tr>
<tr>
<td>Pediatrics</td>
<td>0.45</td>
<td>0.24</td>
<td>-47%</td>
<td>0.12</td>
<td>-50%</td>
<td>0.31</td>
<td>158%</td>
<td>1.12</td>
<td>1.00%</td>
</tr>
<tr>
<td>Healthcare</td>
<td>0.71</td>
<td>0.26</td>
<td>-63%</td>
<td>0.14</td>
<td>-46%</td>
<td>0.27</td>
<td>93%</td>
<td>1.38</td>
<td>1.20%</td>
</tr>
<tr>
<td>Prevention of transmission through medical services</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2.58</td>
<td>2.20%</td>
</tr>
<tr>
<td>TOTAL (VND billion)</td>
<td>44.8</td>
<td>25.56</td>
<td>-43%</td>
<td>11.81</td>
<td>-54%</td>
<td>33.37</td>
<td>183%</td>
<td>115.52</td>
<td>100.00%</td>
</tr>
<tr>
<td>Total (US$ million)</td>
<td>3.8</td>
<td>1.9</td>
<td></td>
<td>0.8</td>
<td></td>
<td>2.4</td>
<td></td>
<td>8.3</td>
<td></td>
</tr>
<tr>
<td>Non-equipment Total (VND billion)</td>
<td>22.4</td>
<td>12.76</td>
<td>-313%</td>
<td>5.91</td>
<td>-367%</td>
<td>16.58</td>
<td>181%</td>
<td>57.65</td>
<td></td>
</tr>
<tr>
<td>Non-equipment Total (US$ million)</td>
<td>1.9</td>
<td>1.0</td>
<td></td>
<td>0.4</td>
<td></td>
<td>1.2</td>
<td></td>
<td>4.1</td>
<td></td>
</tr>
<tr>
<td>TOTAL as % of public health expenditure</td>
<td></td>
<td></td>
<td></td>
<td>0.35%</td>
<td></td>
<td>0.15%</td>
<td></td>
<td>0.39%</td>
<td></td>
</tr>
</tbody>
</table>

Source: Ministry of Health (2001); Knowles et al. (2003).

Between 1997 and 2000 government expenditure on HIV/AIDS consistently decreased from VND44.8 billion (US$3.8 million) to VND33.4 billion (US$2.4 million). It can be argued that the capital expenditure on equipment made in 1997 represented investments that did not have to be repeated in subsequent years. However, even the non-equipment expenditure (total expenditure excluding equipment expenses) decreased between 1997 and 2000. Over this period less than 0.5 percent of annual government health spending was devoted to spending on HIV/AIDS. Just over a tenth of HIV/AIDS expenditure was on healthcare, and the rest of non-equipment expenditure was devoted to HIV/AIDS prevention.

According to Ministry of Health records, the number of HIV/AIDS patients who received hospital services has been increasing consistently and rapidly over time (Table 8). The HIV/AIDS Country Profile in 1999 (National AIDS Standing Bureau 1999) estimated that about 67 percent of PLWHAs were under Ministry of Health surveillance. Of these, 75 percent lived in the community, and the remaining PLWHAs were in prison, in custody or treated in hospitals.

Table 8 shows that the number of medical staff infected with HIV has progressively increased during the late 1990s. According to this data, by 2000 cumulatively 157 HIV infected medical staff were reported and received treatment. The supply-side costs\textsuperscript{38} which come about due to HIV infections among health sector staff — either incurred in the workplace, as well as in non-workplace settings — are beyond the domain of this report, and not considered alongside the costs of care and treatment. Nonetheless, the impact of HIV/AIDS among healthcare workers is part of a more general concern about HIV/AIDS among public sector employees that is worth emphasizing as the government of Viet Nam prepares a scaled-up response to HIV/AIDS in the face of an expanding epidemic.

\textbf{Case Study of the Hospital Impact of HIV/AIDS in Viet Nam: Key Findings}

The key themes that emerge from the case study are: (1) hospital care and treatment services for HIV/AIDS are very poor and severely limited by resource constraints in the health system; (2) healthcare-seeking behavior by PLWHAs is strongly influenced by stigma; and (3) most of the HIV/AIDS care and treatment costs are born by households.

It is estimated that only a third of PLWHAs are treated in health facilities (National AIDS Standing Bureau 1999). This pattern of care may due to supply-side constraints reflected in the low expenditure on healthcare highlighted in Table 7. However, the evidence from the case study suggests that this utilization pattern is equally due to the stigma associated with HIV/AIDS and the fact that families avoid being seen to have a family member with HIV/AIDS in the hospital. Instead, the case study revealed that the preferable approach is to care for the infected person at home and, where affordable, have home visits by a healthcare provider. The case study found that the people who are admitted into hospital are those with no family, prisoners or the destitute whose family cannot afford home care alternatives. As discussed in the chapter on poverty and HIV/AIDS, the Household Impact

\textsuperscript{38} These costs would normally include the direct costs of treatment of opportunistic infections and anti-retroviral drugs, as well as the indirect costs associated with: reduced productivity due to morbidity, increased days off due to illness, and loss of skilled staff that need to be replaced once the staff member dies.
Case Study gave some insight into the burden – financial and otherwise – of home-based care on household members of a PLWA.

The Hospital Case Study revealed that HIV infected in-patients usually receive hospital treatment for opportunistic infections but not anti-retroviral therapy. This is largely driven by ability-to-pay. Access to anti-retroviral drugs (e.g., lamivudine, combivir and crixivan) is extremely limited. In fact, none of the in-patients included in the case study received free anti-retroviral drugs from the hospital. In-patients were usually poor and not able to afford anti-retroviral drugs, and therefore receive only minimal palliative care and treatment of some opportunistic infections. Unlike the in-patient PLWHAs, out-patients receive treatment of opportunistic infections and anti-retroviral therapy (paid for out-of-pocket). All out-patients included in the case study had used at least one dose of anti-retroviral drugs during the surveyed year and most out-patient PLWHAs had CD4 tests done for monitoring AIDS progression. According to the interviews with medical staff, out-patient PLWHAs generally visit the doctor on a monthly basis when anti-retroviral drugs can be afforded and interrupt the treatment when not affordable.

Hospital treatment costs of HIV/AIDS have not been studied in Viet Nam. The detailed results of the costing are presented in Appendix D.

Projections of the Cost of Providing Care and Treatment


The projections of the health sector impact focus on the treatment and care requirements and, as mentioned, do not include the supply-side costs associated with healthcare staff contracting HIV/AIDS. A key consideration when planning for care and treatment of PLWHAs is the adoption of universal precautions. The latter remains a challenge throughout the health sector and, in the absence of appropriate training and implementation of universal precautions, infection of staff is likely to increase over time as the exposure of medical staff to HIV increases due to the increased prevalence of HIV among the general population. The cost of universal precautions is a prevention intervention and are therefore not be considered here as part the cars and treatment estimates.

39 The Ministry of Health initiated a study which is currently underway of the hospital costs of HIV/AIDS treatment and care. This study aims to (1) determine the major HIV/AIDS related opportunistic infections in Viet Nam; (2) estimate the average annual costs of treatment of HIV/AIDS opportunistic infections; and (3) recommend to Ministry the average in-patient treatment cost due to HIV/AIDS for budget planning purposes.

40 In support of the UN General Assembly Special Session (UNGASS) on HIV/AIDS in June 2001, UNAIDS prepared estimates for total resource requirements for HIV/AIDS interventions in 2005 (Schwartlander, et. al., 2001). The Futures Group, a contributing partner to the UNGASS estimates, updated and extended projections to the year 2007 for 135 countries, including Viet Nam, based on a Resource Needs Model.
The projected cost of care and treatment is shown in Figure 13 using three tiers of care and treatment: (1) the cost of diagnosis, palliative care and treatment of opportunistic infections; (2) the first tier plus opportunistic infections; and (3) the second tier plus anti-retroviral therapy.\(^\text{41}\) It is estimated that in 2004 the cost of the first tier (excluding opportunistic infection prophylaxis and anti-retroviral therapy) will be VND26.2 billion (US$1.7 million) and is projected to increase by 45 percent to VND37.9 billion (US$2.5 million) in 2007. When the cost of opportunistic infection prophylaxis is added, the costs in 2004 will rise by 17 percent to VND30.7 billion (US$2.1 million). The inclusion of anti-retroviral therapy increases the costs substantially to VND497.6 billion (US$33.2 million) in 2004 and is projected to be VND252.5 billion (US$16.8 million) in 2007.

Anti-retroviral therapy is by far the largest driver of the projected costs. Figure 14 shows the composition of the cost estimates when opportunistic infection prophylaxis and anti-retroviral therapy are included\(^\text{42}\).

**Figure 13: Costs of HIV/AIDS care, diagnosis and treatment (2004-2007)**

In 2004 just over 90 percent of costs are required for anti-retroviral therapy and ARV-related laboratory costs. This proportion decreases to approximately one half in 2007. This decrease is due to two factors: (1) it is assumed that the price at which ARVs are currently available in Viet Nam ($4,027 obtained from the Hospital Case Study) will reduce to $300 in 2007 and (2) the increase in the number of PLWHA covered with ARV therapy to 55 percent in 2007.

\(^\text{41}\) The full set of assumptions on which these projections are available from: www.futuresgroup.com.

\(^\text{42}\) In the past year improved models for the estimation of the costs of anti-retroviral therapy have emerged and will be more appropriate for detailed estimation of the programmatic costs of implementing anti-retroviral programs. One such model is the Cape Town Model, developed by the University of Cape Town in South Africa.
These costs do not include the investment costs needed to implement the services needed to translate the resources into outputs. Laboratory capacity is a key dimension of the health sectors’ ability to respond to the HIV/AIDS challenge. An inventory of 494 laboratories in 2000 assessed the HIV/AIDS testing capacity of the Vietnamese health sector (National AIDS Standing Bureau 2001). Among the surveyed laboratories, a fifth could perform ELISA\textsuperscript{43} tests and a quarter could perform SERODIA\textsuperscript{44} tests. Only four laboratories had CD4 counters\textsuperscript{45} but not all CD4 counters could operate at their intended capacity as the costs of tests were too high for PLWHAs.\textsuperscript{46}

Figure 14: Composition of cost of diagnosis, care, and treatment (2004-2007)

![Diagram showing the breakdown of cost of care, diagnosis, and treatment (2004-2007)]

How do these estimates compare to the level of expenditure on healthcare in Viet Nam? The most basic two tiers of healthcare services for PLWHAs (without and with opportunistic infection prophylaxis), is 0.3 percent of the total government health expenditure in 2000. When anti-retroviral therapy is added, the proportion increases to approximately 5.6 percent of the total government health expenditure.

The most basic tiers of healthcare services for PLWHAs are within the range of affordability given the current level of health spending in Viet Nam. The estimation of the costs of care including ARVs should form the basis for further dialogue on the implementation of care and ARV treatment for

\textsuperscript{43} The ELISA (Enzyme-Linked Immuno-sorbent Assay) method is a fundamental tool of clinical immunology, and is used as an initial screen for HIV detection.

\textsuperscript{44} The Serodia test is an article agglutination test for determination of HIV infections.

\textsuperscript{45} CD4 counters are used for the counting of immuno-labelled cells like in CD4/CD8 cells for HIV screening and treatment follow-up.

\textsuperscript{46} The out-of-pocket expenditure for an HIV test varied from VND29,000 to VND48,000.
PLWHAs in the country. The decision whether or not to implement widespread access to anti-retroviral drugs will entail considerable debate and discussion, as it is not only financial resources that enter into this decision-making process. A key element of this process will have to be negotiation with the pharmaceutical industry in order to Viet Nam to benefit from the price reductions that have been seen globally.
PART V: IMPLICATIONS FOR VIET NAM
What Have We Learned? and What Can Be Done?

This study has highlighted the convergence of the impacts of HIV/AIDS on the households of PLWHAs – whether from the perspective of the expenditure effects, the income effects or the lost education investments. These household effects made it clear that HIV/AIDS does not only affect PLWHAs like Quang. By showing the broader consequences to the children, the siblings, the spouses, the parents, and the grandparents of PLWHAs it is hoped that the study will progress the discussion of HIV/AIDS in Viet Nam beyond the social evil paradigm and its implicit victim blaming ethical framework.

The study also highlighted the link between HIV/AIDS, household vulnerability and poverty. Moreover, the study has pointed to the flaws of exclusively focusing on the macroeconomic and growth impacts of HIV/AIDS to the exclusion of its impact on household vulnerability – as has been the case for many AIDS impact assessments in the past. From a poverty-impact perspective, it is particularly compelling that HIV/AIDS-affected households are affected by five of the seven most common idiosyncratic risks identified in Viet Nam: illness, life cycle events (e.g., funerals), drug addiction, loss of physical assets, and unemployment. Indeed, the participatory poverty assessments indicated that, in recent years, illness was the most common cause of poverty in Viet Nam.

This chapter summarizes the key findings that have emerged from the Socio-Economic Impact Assessment of HIV/AIDS in Viet Nam and, based on these findings, makes practical recommendations on the response to the epidemic.

HIV/AIDS as a Risk Factor for Poverty

It is estimated that by 2004 126,000 people in Viet Nam will either become newly poor or fall deeper into poverty because of HIV/AIDS (Figure 11). This number steadily increases over the next decade to reach 504,000 in 2015. Over this period, on average, 36 percent will because newly poor and 64 percent will fall deeper into poverty (Figure 11). Yet, the 2004 Viet Nam Development Report gives little recognition to the poverty risk that HIV/AIDS poses. The Comprehensive Poverty Reduction and Growth Strategy makes numerous references to HIV/AIDS. These references are, however, in relation to health sector interventions, and do not include HIV/AIDS in the interventions that provide support for poor and vulnerable people.

The emergence of HIV/AIDS as a risk that increases households’ vulnerability needs to be fully acknowledged in poverty assessments in Viet Nam, and taken into account as a factor that may potentially slow down the rate of poverty reduction in the future. Within this context, HIV/AIDS needs to be formally included in the government’s efforts to reduce poverty.
Formal Support to Mitigate the Effects of HIV/AIDS

At the household level the channel of influence of the epidemic is mainly via increased HIV/AIDS-related health spending. The emphasis on the consequences of increased health spending is particularly pertinent and important in Viet Nam given the large burden of health spending that falls on households. By showing that healthcare costs that are not borne by the health system are shifted to the household the study has very explicitly linked the household and health sector response to HIV/AIDS.

The modeling based on the case study findings showed that even if as much as half of the impact of increased health spending was mitigated through various coping strategies, per capita consumption expenditure among households of PLWHAs may drop by between 40 percent and 50 percent (Figure 7). Households with a PLWHA in all but the richest expenditure quintile will fall not only below the overall poverty line but, in the case of the poorest two quintiles, also below the food poverty line due to the expenditure and income effects of HIV/AIDS (Figure 9). Given the impoverishing consequences of HIV/AIDS-related expenditure and income effects, informal support mechanisms need to be complemented by formal mechanisms of assistance. Some of the existing social assistance instruments in Viet Nam can be used to this end.

Specifically, institutional mechanisms of support to poor households with healthcare expenses (e.g., Health Care Cards and Health Care Funds for the Poor created by Decision 139 in 2002), need to be formally extended to recently poor households of PLWHAs. While these mechanisms are not without problems they do offer some promise of assistance. For example, the common delays in accessing these social assistance instruments will cause recently poor households, who legitimately are eligible, not to benefit from the support when it is most needed. For households of PLWHAs who are not yet poor, ways need to be devised to assist households with drug expenditures as well as in-patient hospitalization costs.

Formal support to poor households of PLWHAs to mitigate the impact of the income and expenditure effects on household consumption needs to be facilitated. Examples of these social assistance instruments are poverty certificates.

While the impact on individual households is catastrophic, the aggregate impact on poverty in the country is relatively small. The implication of the latter findings is that the cost of publicly funded assistance in the options proposed will more likely be affordable.
Healthcare Consequences: Moving from Under-Treatment to Affordable Care

HIV/AIDS-related health expenditure of households of PLWHAs was found to be more than 10 times higher than the average level of health spending in Viet Nam. Qualitative interviews revealed that the biggest concern of PLWHAs was access healthcare services and drugs. In addition, interviews with clinicians indicated that patients are currently receiving sub-optimal levels of care, largely due to severe resource constraints in the health system.

The cost of a basic care and treatment program was estimated at VND 26.2 billion (US$1.7 million) in 2004 (Figure 13). When another tier of services is added, (opportunistic infection prophylaxis) the healthcare requirements were projected to rise by 17 percent to VND30.7 billion (US$2.1 million). The next tier, the inclusion of anti-retroviral therapy, increases the costs substantially to VND497.6 billion (US$33.2 million) in 2004.

The most basic tier is less than half a percentage point of government spending on healthcare and certainly within the range of affordability for the country. As a starting point, this will go a long way to address the under-treatment currently provided in the health system, and reduce the burden of care and treatment costs on households of PLWHAs.

Even if government decides not to finance anti-retroviral therapy, private households will continue to spend substantial resources on anti-retroviral drugs as the case studies indicate. The evidence from the two case studies suggests irregular use of anti-retroviral drugs in a manner that will enhance resistance and in the long run complicate the fight against HIV/AIDS. Not only are PLWHAs not getting the health benefits from irregular anti-retroviral drugs use, but their households are feeling the devastating consequences of expensive anti-retroviral therapy. The government can assist households by negotiating for price reductions with the pharmaceutical industry (with the support of multilateral development partners).

Stigma Worsens the Impact and Hampers the Response

Stigma has consequences on a variety of levels. At the national, provincial local government level, it causes reduced access to formal support mechanisms that households require due to biased implementation of eligibility criteria and reduced budgetary allocations for AIDS-related interventions. At the community level stigma may hamper informal support mechanisms that ordinarily help households cope with the consequences of an economic shock. Stigma therefore hampers the household’s ability to respond to the economic hardships associated with HIV/AIDS, and increases their vulnerability to poverty.

There are several features of Viet Nam that, depending on the government’s response, may continue to slow down rapid spread of HIV/AIDS. For example, the status of women in Viet Nam is reasonably good compared to...
the situation in many African countries and most South Asia countries. Viet Nam has strong mass-based organizations, and it can organize effectively to address critical problems – as illustrated by the dramatic success of its family planning program. The Government also has the experience of dealing swiftly and effectively with epidemics, e.g., SARS. Lastly, the Vietnamese health system is reasonably developed for a country of this level of development, particularly in rural areas. However, the level of stigmatization of HIV/AIDS in the future will determine whether these factors are indeed positive factors able to mitigate the spread and impact of HIV/AIDS in Viet Nam.

Given the relatively early stage of the epidemic, Viet Nam has unique opportunity to respond and stem the spread of HIV/AIDS that so many countries have experienced. However, the window of opportunity is gradually closing as the HIV/AIDS epidemic spreads to the general population. This report has shed light on the microeconomic consequences of HIV/AIDS and has substantially enhanced understanding how households – like the household of Quang – respond to and cope with the impoverishing impacts of HIV/AIDS in Viet Nam. By focusing on the microeconomic consequences of HIV/AIDS, emphasizing the impact on household vulnerability and poverty, and making linkages to key development goals, this study places HIV/AIDS squarely within a development context. It is anticipated that the findings presented in this report will inform planning and, where necessary, policy reform required to implement interventions aimed at prevention and impact mitigation needed to undo reversible outcomes and prevent irreversible consequences of the epidemic.
PART VI: APPENDICES AND TECHNICAL ANNEXES
Appendix A: Indictors with Linkages to the HIV/AIDS Epidemic

The analyses of the socio-economic impact of HIV/AIDS in Viet Nam presented in the report was used to identify key indicators that can be used to better assess and monitor the impact the HIV/AIDS epidemic. The indicators are categorized into six groups:

- Indicators of household and individual welfare
- Poverty indicators
- Indicators of household and per capita health expenditure
- Indicators of social support
- Indicators of access to formal support
- Indicators of health sector response

Indicators of household and individual welfare

- Household and per capita consumption expenditure of households with PLWHA
- Dependency ratio of households (measured using the income dependency ratio, the average number of people within a household who are supported by each household member earning an income).

Poverty indicators

- Poverty head count (the percentage of individuals or households below the poverty line) in general and among households of PLWHAs
- Proportion of population below $1 per day in general and among households of PLWHAs

Indicators of expenditure effects

- Per capita health expenditure
- Household health expenditure
- Health expenditure as a proportion of non-food consumption expenditure

Indicators of social support

- Support received from neighbors, friends and family
**Indicators of access to formal support**

- Access to formal support mechanisms in general and among households of PLWHAs
- Access to exemptions for healthcare payments (health care card and the healthcare fund for the poor) in general and among households of PLWHAs
- Waiving of school fees for AIDS orphans

**Indicators of health sector response**

- Percentage of resource gap financed through resource mobilization
- Coverage of PLWHAs with opportunistic infection treatment
- Coverage of PLWHAs with opportunistic infection prophylaxis
- Annual cost of anti-retroviral drugs
Appendix B: HIV/AIDS in Viet Nam

According to UNAIDS there are about 6.0 million adults and children living with HIV/AIDS in South and South-East Asia, accounting for 14.2 percent of the 40 million HIV infected people globally (UNAIDS 2002b: 6). Average adult prevalence for the South and South-East Asia regions was 0.6 percent in 2002, and during that year there were 270,000 newly infected adults and children in the two regions (UNAIDS 2002b: 6).

The first case in the southern Mekong region countries was identified in Thailand in 1984. Two countries in the region, Thailand and Cambodia, now have a generalized epidemic, 47 whereas Viet Nam and Laos have a concentrated epidemic. Cambodia has had the highest rate of increase in prevalence since its first case was reported in 1991. In the South-East Asia region prevalence has been increasing steadily – adult HIV prevalence in Cambodia is 2.7 percent, 1.8 percent in Thailand, 0.3 percent in Viet Nam and less than 0.1 percent in Laos (UNAIDS 2002a: 194). However, it should be noted that these low rates, especially in Thailand and Cambodia, are not merely natural disease progression, but are thanks to targeted interventions.

In Viet Nam the evolution of the epidemic since 1990, as well as its impact, has been concentrated among intravenous drug users (IDUs). As in other South East Asian countries (e.g., Thailand, 48 Cambodia), there is evidence that Viet Nam is experiencing at least two epidemics simultaneously – one among IDUs and another among non-IDUs. IDUs generally operate in relatively closed circles, tend to be quite marginalized, and are more likely to be un- or underemployed. These features have contributed to the perception in Viet Nam that the impact of the epidemic will be relatively small because of the relatively low contribution of IDUs to the economy. Furthermore, it is often asserted that the marginal impact of HIV/AIDS-related healthcare costs at the household level, over and above the devastating household impact of IDU, is minimal.

A few points have to be made in this regard. The first is that not all IDUs are unemployed. In various studies at least a third of IDUs have some form of employment (Tran Hien 2002). Secondly, since the early 1990s, the investments into rehabilitation of IDUs, which are not trivial, are increasingly intertwined with HIV/AIDS. The returns to these investments are substantially reduced if the IDUs die of HIV/AIDS during early adulthood. Thirdly, a forward-looking assessment of the potential impact of HIV/AIDS will have to take into account the decreasing age of IDUs and patterns of recreational IDU. Lastly, bridging population behaviors determines the extent to which these bridge the epidemic from high-risk groups to the general population. It

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47 Epidemics are categorized into low-level (adult prevalence not consistently exceeding 5 percent in any vulnerable group), concentrated (adult prevalence consistently exceeding 5 percent in vulnerable groups but below 1 percent in antenatal clinic attendees) and generalized (adult prevalence exceeding 1 percent in antenatal clinic attendees) (POLICY Project 2003: 14).

48 In Thailand four waves of the epidemic were identified: the first wave was among IDUs, the second among CSWs, the third among male STD patients and the last among sexually active individuals in the general population as well as infants (Weniger et al. 1991).
is therefore important to shift the focus from the stigmatized notion of high-risk groups such as IDUs and sex workers to high-risk behaviors, because it is these high-risk behaviors that will determine the rate of transmission of the virus beyond the high-risk groups in Viet Nam (POLICY Project 2003: 9, 10). Examples of high-risk behaviors are unsafe injecting drug use and unprotected sex.

Earlier in the report the economic forces that contribute to Viet Nam’s vulnerability to the HIV/AIDS epidemic were identified. These factors are becoming important given that the absence of these factors have been identified as reasons for the slow growth of the epidemic in Viet Nam are rapidly changing (Tran Hien 2002). For example, since 1988 Viet Nam’s borders have progressively opened resulting in increased trade-related and tourism-related mobility. Within the country there is also more mobility due to the decreasing growth in agricultural opportunities in favor of urban jobs. These changes have also been accompanied by increasing drug use and an expanding commercial sex sector in the late 1990s (Te 1995). It is important to note that these factors will contribute to spread among the non-IDU population, rather than expanded spread among current IDUs.

Data Gaps and Shortcomings

Two main sources of data on HIV/AIDS are available in Viet Nam: HIV/AIDS case reporting and HIV/AIDS sentinel surveillance. The latter is used to estimate the national HIV/AIDS prevalence and to make future projections of HIV/AIDS prevalence using scientific and internationally recognized methodologies.

Case Reporting in Viet Nam

As of October 2003, there have been a cumulative total of 73,660 HIV infections, 11,254 AIDS cases and 6,325 AIDS deaths (MOH 2003b: 2). Because of the nature of HIV/AIDS and weaknesses generally associated with case reporting systems, under-reporting is a serious problem associated with case reporting systems. In fact, fewer than 20 percent of HIV infections are reported in Viet Nam (Tran Hien 2002: 35). A further problem is that HIV infection only manifests clinically 5-8 years after infection and case reporting usually captures symptomatic HIV infected individuals. Many countries have avoided implementing case reporting systems in part due to these weaknesses. In Viet Nam case reporting is mandatory for IDUs, sex workers, blood donors and prisoners, and voluntary among other groups (Tran Hien 2002: 35) suggesting a potential source of bias away from the general population in the reported statistics.
Viet Nam started sentinel surveillance in 1994 in 8 provinces. This was expanded to 12 provinces in 1995, and to 20 provinces in 1996. Several sources of sampling bias, participation bias and reporting bias have been identified (Tran Hien 2002). Sentinel surveillance is confidential but not unlinked and anonymous – this is one source of participation bias.49 The sampling frame is biased toward urban sentinel sites. In the estimations and projections calculations these urban estimates are imposed onto rural areas. These biases and other challenges are currently being addressed by the Estimations and Projections Working Group.

**Overview of HIV/AIDS Trends**

The first case was reported in December 1990 in Ho Chi Minh City. No infections were reported in 1991, and in 1992 11 new infections were reported. In 1993 there was an outbreak among IDUs in Southern and Central provinces, for example, Ho Chi Minh City and Nha Trang Province. By 2001 each of the 61 provinces had reported HIV infections. The age distribution among the reported infections show an emphasis on young adults – 49.9 percent of reported infections are among the 20-29 year old age group (Tran Hien 2002: 21).50 Annual reported infections have roughly doubled each year since 1994 (Tran Hien 2002: 21).

In 1999, Tran Hien (2002) reported that there are at least two main HIV/AIDS epidemics in Viet Nam—one among IDUs and another among sex workers in provinces bordering Cambodia (where a lot of Vietnamese work as prostitutes). Given the increasing prevalence in other risk categories in the past four years, it can be said that there are also two epidemics among IDUs and the rest of the population, with the latter trailing several years behind the former.

Increasing rates among the general population in selected sub-national areas: The sentinel surveillance sites that capture prevalence among the general population are the antenatal clinic sites and military recruits. The sentinel surveillance data from these sites show a continued increase in prevalence in recent years (Figure 15), whereas prevalence among the high-risk sentinel sites (IDUs and sex workers) show stabilization of infections (Figure 16). Evidence of increasing prevalence among generalized population of women can be found among antenatal clinic attendees – prevalence increased from 0.02 percent in 1994 to 0.40 percent in 2002 (Tran Hien 2002: 42; MOH 2003a). In two provinces (Ho Chi Minh City and An Giang Province) the antenatal clinic surveillance data show rates in excess of 1 percent, suggesting progression from a concentrated epidemic to a generalized epidemic. Similarly, evidence of increasing prevalence among generalized population of men can be found among STI patients. Despite the

49 While unlinked anonymous methods were recommended to the provinces, some provincial and local authorities have insisted on identifying all HIV positive individuals (Tran Hien 2002: 37, 43).
50 23.2 percent of HIV infections are 30-39 years old and 12.2 percent are 40-49 years old (Tran Hien 2002: 21).
shortcomings of this data (e.g., the fact that it excludes all private providers, where most sexually transmitted infections are treated) there is evidence of increasing trend from 0.46 percent in 1994 to 2.00 percent in 2002 (Tran Hien 2002: 42; MOH 2003a). In Ho Chi Minh City the increase has been more rapid – from 0.3 percent in 1993 to 9.6 percent in 2001 (Le Truong 2003). However, in spite of the increasing infections among low risk populations in some sub-national areas, the epidemic in Viet Nam is fundamentally driven by the epidemic among IDUs, and sex workers and their clients.

Figure 15: HIV prevalence among low risk groups (1994-2002).

![Sentinel Surveillance: Low Risk Groups](image)

Figure 16: HIV prevalence among high risk groups (1994-2002).

![Sentinel Surveillance: High Risk Groups](image)

Increasing rates among at risk youth: Figure 17 shows that 15-24 year olds comprise an overwhelming proportion of reported HIV infections, well in excess of the share of the population (about 20 percent). In 1994, this group
accounted for 10.6 percent of infections and, since 1999, the proportion had risen to about 40 percent (Figure 17). The two main drivers of the epidemic in Viet Nam are intravenous drug use and sexual activity. Behavioral surveillance studies show lack of and incorrect knowledge about HIV/AIDS as well as risk-taking behavior among the youth in relation to both these determinants (UNDP 2003). The study also revealed some misconceptions of sexual activity among the youth in Viet Nam – despite the general perception of delayed sexual activity among females, there is now evidence suggesting that the average age of first sexual intercourse is 18.9 years, with no significant difference between male and female youth.

Figure 17: Proportion of reported HIV infections among the youth (1994-2002)

Youth and HIV Risk

Epidemiologic and behavioral surveys have provided the following evidence:

Youth are having sex: In Viet Nam, sex before marriage among youth has increased, despite the fact that it was often denied. The evidence from studies in Viet Nam suggests that between 10-20 percent of youth engage in pre-marital sex. Adolescents who start having sex early are more likely to have

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A study conducted among 15-24 year old youth in 5 mountainous and border provinces, reported that only 26.3 percent of youth could correctly answer questions about HIV/AIDS transmission and prevention methods (ref).

The study also found that 52.7 percent of young men and a 33.3 percent of young women used a condom in their last intercourse with a non-regular partner (ref).

According to the 1998 survey on Adolescents, Sexuality and Contraception taken by the Institute of Youth, about 8 percent of young people ages 15-18 year-olds in eight provinces were sexually active (UNICEF 2002). In their population survey in 6 provinces in Viet Nam 2002, Mensch et al. (2002) found that about 10 percent male and 5 percent female youth aged 15-22 has reported had sex before marriage. A community survey conducted by Ministry of Health and National Committee for Population, Family and Children (VCPFC) of 2,379 unmarried youth ages 15-24 in five provinces (Lai Chau, Quang Tri, An Giang, Kien Giang, Dong Thap), estimated that from 6.0 to 30.8 percent of male and female youth have ever had sex (Tuan et al. 2002).
sex with high-risk partners or multiple partners, and are less likely to use condoms (UNICEF 2002).

Youth lack of information: Young people have poor access to information on reproductive health. As a result, as local studies demonstrate, Vietnamese young people have incomplete knowledge and understanding of sexuality, contraception, and safe sex. While recent studies have shown that premarital sex has been increasing, the use of contraceptive methods among unmarried youth is still very low. Low use of contraceptive methods and poor knowledge of their effectiveness, combined with increasing sexual activity among adolescents and youth have put them at higher risk of sexually transmitted infections, pregnancy and unsafe abortion (UNICEF 2002).

Some youth are very high risk: Intravenous drug use among young people, especially young men, has increased dramatically in recent years. According to MOLISA, young people constituted 39.5 percent of the drug user population in 1994 and this proportion increased to 70 percent in 2001 (MOLISA 2001). The age of IDUs reduced from 29-40 years in 1993-1997 to 20-27 years in 1999-2000 (Table 9) (Power 1996; Tran Hien et al. 2000a, 2001b, 2002; Tuan et al. 2001; Tung et al. 2001). Sexual activity among intravenous drug users occurs earlier in adolescence, is more frequent, and more likely to be unprotected.

Table 9: Age distribution of injecting drug users

<table>
<thead>
<tr>
<th>Authors, study site</th>
<th>Age distribution (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tran Hien et al. 2002 Quang ninh</td>
<td>3.2</td>
</tr>
<tr>
<td>Tung et al. 2001 Hanoi</td>
<td>0</td>
</tr>
<tr>
<td>Hai Phong</td>
<td>0.3</td>
</tr>
<tr>
<td>Da Nang</td>
<td>0.7</td>
</tr>
<tr>
<td>Can Tho</td>
<td>1.8</td>
</tr>
</tbody>
</table>

Sources: Tran Hien et al. 2002; Tung et al. 2001.

54 Of 4,675 adolescents ages 10-19 in a 1998 survey of five provinces, 81.4 percent had heard about HIV/AIDS, but nearly 85 percent had never heard of gonorrhea or syphilis (UNICEF 2002). The 1999 KAP survey of 1,005 young persons ages 15-24 in Hai Phong City on reproductive health issues showed that knowledge of STD prevention was still low. Using a condom was the most widely known method of STD prevention (68.9 percent), followed by not having sex with a prostitute (60.7 percent), having one sexual partner (57.8 percent), and not sharing a needle (35 percent). In their survey in 2002 of 2,379 unmarried youth ages 15-24 in five provinces (Lai Chau, Quang Tri, An Giang, Kien Giang, Dong Thap), Tuan et al. estimated that from only 29 percent to 60.1 percent of youth have cited correctly 3 method of HIV prevention (Tuan et al. 2002).

55 Tran Hien et al. (2002) found that 71 percent IDUs in Quang Ninh in 2000 had the first sexual intercourse before the age of 20 and 73.4 percent reported sex with sex workers. Tuan et al. reported 53 percent single IDUs in Hai Phong 1999 have had sex. Phi et al. (1999) found that about 50 percent IDUs in five northern provinces (Ha Noi, Thai Nguyen, Hai Phong, Lang Son and Nghe An) in 1999 had sexual intercourse before marriage and 85.6 percent of them had their first sex experience with a female sex worker. These proportions are much higher than the corresponding proportion among non-IDUs youth in Viet Nam.

56 Condom use is low among IDUs. From 28 percent to 56 percent IDUs in Ha noi, Hai Phong, Quang Ninh, Da Nang, HCMc and Can Tho in 2000 reported consistent condom use with female sex workers in the past 12 months (Tung et al. 2001; Tran Hien et al. 2002).
In Viet Nam, the average age of sex workers is about 25 years, generally ranging between 18-30 years old (Elmer and Tung 2001). However, some investigations report sex workers under the age of 18. These young girls and women are mostly unmarried, have a low socio-economic status, and come from poor and often troubled families. Research findings indicate inconsistent use of condoms by sex workers and their clients.57

**IDU fueling the epidemic**

IDUs have been the starting point of the epidemics in many Asian countries. Using the Asian Epidemic Model, Saidel et al. (2003: 63) showed that in countries where the epidemic among IDUs starts in advance of a generalized (non-IDU) heterosexual epidemic, as is the case in Viet Nam, there was a 171 percent increase over a 15 year period in infections if IDUs prevalence is not kept under control. They found that once a heterosexual epidemic is underway there was a meaningful reduction (23 percent) of infections if HIV infection among IDUs are controlled (Saidel et al. 2003: 63). This research establishes clear linkages between intervention among IDUs and the spread to the rest of the population. The difference between the costs of prevention and no or ineffective investment into prevention is thus greater in view of the research that shows that IDU prevalence of HIV/AIDS contributes to generalized spread of the epidemic in early as well as advanced stages of the epidemic (Saidel et al. 2003: 63; Monitoring the AIDS Pandemic 2001).

Keeping HIV infection rates low among IDUs buys time before the epidemic spreads among the heterosexual population. In Viet Nam, HIV rates among IDUs have been high (24 percent in 2000), and the isolation of IDUs in rehabilitation centers may have slowed down the heterosexual transmission. However, there is clear evidence that the policy of isolation/rehabilitation has not prevented heterosexual spread which in recent years has proceeded steadily (Figure 22).

The probability exists that in Viet Nam the HIV/AIDS epidemic will become more widespread if measures are not taken now to check its progress. The evidence already points to intensification of HIV prevalence in young vulnerable populations and geographic expansion to high risk groups throughout Viet Nam.

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57 For example, more than 50 percent of sex workers in Nha Trang used condoms only "some" of the time; 65 percent of indirect sex workers in three southern provinces reported using condoms only sometimes or never; and 70 percent of about 800 male STD patients sampled in two southern provinces “never use condoms.” (Elmer and Tung 2001).
Appendix C: Case Study of the Impact of HIV/AIDS on Households

The development impact of HIV/AIDS stems largely from the aggregation of the microeconomic, household-level social and economic impacts of the epidemic. The microeconomic impact of HIV/AIDS is important for several reasons. First, households are the first line of defense as the burden of HIV/AIDS is first felt by the affected households (Hunter and Williamson 1998). Second, assessments of the macroeconomic impact of HIV/AIDS are widespread and make assumptions about the microeconomic building blocks that underpin the macro effects. There is less empirical evidence on the microeconomic and specifically, the magnitude and mechanisms of household-level effects. Third, where the macroeconomic impact will not likely be large, such as in Viet Nam, the micro-level impacts are not trivial and are worsened by stigma and discrimination. Lastly, and importantly, macro-level studies give little insight into the distributional impact of the HIV/AIDS epidemic, whereas microeconomic analyses, using household data, are able to shed light on the impact of HIV/AIDS on poverty and inequality.

This technical annex starts with the aim of the study and the theoretical framework, which was informed by existing literature on the household impact of HIV/AIDS. This is followed by the methodology and the results. Lastly, some of the limitations of this research are discussed.

Box 5 shows some evidence from other household studies of HIV/AIDS in the region.

Box 5: Studies of the household impact of HIV/AIDS from other countries

- Estimates from Latin-American and Caribbean countries found that average annual expenditure on healthcare by households of people living with HIV/AIDS (PLWHA) was US$1,000 (Mc Greevey et al., 2002). Given the existing body of macroeconomic impact evidence it is unlikely that further aggregate impact investigation will yield much additional information (Greener 2002). One of the key areas of additional information that will enhance the validity of macroeconomic impact assessment, is the impact of HIV/AIDS on households, poverty and to explore possible poverty interventions to respond to the microeconomic effects (Greener et al. 2000).

- In Thailand similar studies estimated the cost of medical care to be US$837 (from Viravaiya et al. 1992) and US$1,335 (in 1996) (in Bloom et al. 2002).

- An assessment of the household responses to HIV/AIDS in Thailand found that 19% of households surveyed sold assets and 60% spent all their savings in response to the illness of a PLWHA in the household (Pitayanon et al. 1994). These effects are obviously related to health financing arrangements in a given country.

- Evidence from Tanzania suggests that households are able to partly compensate for the impact of the death of a family member (Over et al. 1996).

- Research into household responses to idiosyncratic shocks found that mechanisms of informal insurance are tenuous and incomplete. This study also found that vulnerability to shocks varies across households (Over et al. 1996). Often the insurance mechanisms do not protect the poorest in society and in fact contribute to increasing inequality between the rich and poor (Lundberg et al. 2000: 950).

- HIV/AIDS was found to adversely affect the health and wealth of households with HIV-infected individuals and aggravated pre-existing poverty in South Africa (Bachman and Fredericks 2003: 14). This study found that expenditure and income decreased more rapidly in HIV/AIDS-affected than in unaffected households.
due to increased expenditure on healthcare and eventually funeral costs. These costs are transient effects, but the increased expenditure may put the household into debt that may take many years to repay. The income effects come about due to (1) lost income when a breadwinner who is HIV positive works less or becomes unemployed because of illness; and (2) loss of income as a caregiver who is also a breadwinner works less or stops working to provide care for a sick family member. The first income effect is permanent and the latter income effect is transient. However, in unfavorable labor market conditions the latter income effect is potentially permanent.

The resultant effect is to decrease the consumption expenditure available to households, and potentially crowd-out other household expenditures. Households that were marginally poor may fall below the poverty line, and already poor households are likely to experience deepening poverty. The impact on poverty is worsened by the fact that HIV/AIDS is not an idiosyncratic shock such as non-infectious illnesses, injury, death or adverse weather conditions (e.g., draught, floods). The high prevalence of HIV/AIDS in Southern Africa results in correlated exposure of individual households to HIV/AIDS-related shocks. In Viet Nam, HIV/AIDS-related illness can still be described as an idiosyncratic shock. As prevalence increases, especially in the high prevalence areas in Viet Nam (such as Ho Chi Minh City and Quang Ninh Province), these idiosyncratic shocks may take on a correlated character. When shocks are correlated the ability of households to respond to the impact is significantly decreased (Deaton 1997).

**Household Coping Strategies**

The various income and expenditure effects may have short-term impacts and others may have longer term impacts. When faced with a decrease in household disposable income, households engage in various coping strategies, for example: (1) consumption smoothing strategies (cutting down on education expenditure, food consumption, etc.); (2) using existing savings; (3) selling of assets; (4) borrowing rice and money from informal sources (e.g., friends, relatives) or formal sources (e.g., banks and short-term money lenders); (5) changes in the household living arrangements (e.g., migration of an adult or child), as well as (6) drawing on various sources of social capital in the form of gifts from the community in the form of food or money, moral support and the sharing of work contracts.

The extent to which households and individuals with HIV/AIDS can draw from informal and formal mechanisms of community support is strongly influenced by stigma. The latter influences the ways in which households decide on seeking outside help. This in turn will influence the perceptions of others in the community on whether such households really need help or not. The stigmatization and marginalization of households with a PLWHA determines whether support from community is forthcoming and ultimately influences the

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59 In rural communities in Viet Nam, formal institutional mechanisms of support exist as well as informal mechanisms among households and members of the same lineage and/or neighborhood.
the burden on the household. It is therefore important to link the community response with the household impact of HIV/AIDS.

HIV/AIDS-related stigma and discrimination impact on social cohesion at both the household and the community levels. On the one hand, social cohesion constitutes the foundation upon which community-level mechanisms of support are built. It could be argued that only in those communities that have maintained a significant level of cohesion could internal resources be mobilized to develop support mechanism to members in need. This breaks down in the presence of stigma. On the other hand, diseases with high level of stigma and fear, such as HIV/AIDS, often create new types of cohesion among those (households and individuals) with shared interests (e.g., shared identity of being HIV positive). Thus, while shattering some aspects of family and community cohesion and bonding, new types of cohesion may be created from which new mechanisms of support could be developed. This possible scenario depends largely on two factors – one is the number of people affected by the epidemic; and the other is the level of resources (both human and financial) that members of affected communities have at their disposal. In Viet Nam, injecting drug users and sex workers constitute the largest share of the HIV positive population. Because of the high level of marginalization, these groups are less capable of organizing themselves in ways that could foster ‘alternative’ voices in the society, let alone formal support mechanisms for fellow people living with HIV/AIDS.

Methodology

There methodological challenges of studying the household impact of AIDS. These challenges were primarily data related and related to the fact that HIV/AIDS is highly stigmatized — neither of which are unique to Viet Nam. A case study methodology was specified in the terms of reference. The case study methodology as opposed to a survey methodology is appropriate for one very obvious technical reason. Given the low HIV prevalence in Viet Nam, an enormous sample would be required to do a probability sample survey of households in order to yield sufficient numbers of households with a PLWHA. Furthermore, the cost of HIV testing of such a large sample will be quite onerous. Given the level of stigmatization of HIV/AIDS, it is likely that a large selection bias will cause a biased sample even if a large enough sample were to be obtained to address the former concern. There may also be ethical reasons that may prohibit testing for HIV among households.

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60 This is the kind of ‘family of shared identity’ (rather than simply of blood lineage) that was found among white gay men in North America and Western Europe when their community was heavily hit by the epidemic.
61 PLWHA of injecting drug users in North America and Eastern Europe were never able to organize themselves to the level seen among gay men living with HIV/AIDS, and this was due largely to their limited resources, including experiences with organizing themselves against stigma and discrimination in the mainstream societies.
Selection and Identification of Households

Specific sites in each province were selected with the full cooperation of the City/Provincial AIDS Bureau. In Ho Chi Minh City and An Giang, members of “friends help friends” and “peer education” groups\textsuperscript{62} actively collaborated with district/commune health staff and study team in the contacting and selection of households. In the North, the team relied fully on commune health staff to contact in advance and introduce the households with PLWHA with study team members.

The following criteria were considered in selecting households. The starting point was households with a person with AIDS and households where someone has died of HIV/AIDS. Another key dimension was to cover the two high-risk categories (IDUs and sex workers), as well as a non-IDU, non-sex worker category. In addition, to the extent possible, the study team tried to capture both female- and male-headed households, households with a female and a male infected person, single and married infected person of a wide age range, and households with different income levels.

Data collection was conducted in two urban and two rural areas in the North and South of Viet Nam. In the North, data were collected in two urban wards in Halong city in Quang Ninh province (Yet Kieu and Ha Lam wards), and in one urban and one rural community in Thai Binh province (Tran Lam and Vu Tay).\textsuperscript{63} In the South, data were collected in District 4 and District 10 of Ho Chi Minh City and in four communes in Long Xuyen City, An Giang province (My Long, My Xuyen, Binh Khanh, and My Thanh)\textsuperscript{64}. Data collection lasted from September 29 through October 15, 2003 and was conducted in each province by a researcher and a research assistant. In all, 125 households have been visited, providing information on 129 HIV infected people, both dead and alive.

Data Collection Instrument

The key analytical and empirical challenge is to quantify the effects that were asserted in the conceptual approach just described. The questions that guided the development of the data collection instrument were:

*Expenditure Effect*

- Health status and healthcare utilization:
  - What health problems the PLWHA have, especially in the terminal illness period of their lives?
  - What has been the main healthcare providers sought?
  - What have been the volume and type of services used?
  - How was payment made for healthcare and how much?

\textsuperscript{62} These are peer groups of people who usually share identity as IDU or CSW. In this study, the “Friends help friends” group in Ho Chi Minh city is among the IDUs, while in An Giang, the “peer education” group is among the CSWs.

\textsuperscript{63} The original plan is to conduct survey in rural area of Thai Binh province. However, one ward in the Thai Binh city was selected because of high number of HIV positive people (in Tran Lam). Although this ward has recently become urbanized, it remains heavily rural with many residents doing agriculture work.

\textsuperscript{64} Similar to Tran Lam ward in Thai Binh, the four communes in An Giang, although located in the city, can be considered more or less “rural.”
• How much additional household expenditure is spent on healthcare and funerals?
• What percentage of household consumption does health care expenditure constitute? How does the figure compare with that of households of the same income (consumption) level, but with no PLWHA?

**Income Effect**
• What has been the impact of taking care of someone with HIV/AIDS on the job status and number of hours worked?
• What has been the impact of having illness associated with HIV/AIDS on the job status and number of hours worked?
• What has been the impact of having being diagnosed with HIV on the job status and number of hours worked?
• What total amount does the household sacrifice due to loss of income of both caregiver and the ill person him/herself?

**Household Coping Strategies**
• What has the household done to make up for the loss of income?
• How do households cope with the additional spending on health and funerals impact on other expenditures? Do they maintain food and education expenditure and take from savings? Do they maintain food expenditure and reduce education expenditure? Do they maintain education expenditure and reduce food expenditure? If education expenditure is reduced by withdrawing a child from school, is there a gender preference?
• To what extent do households rely on gifts or borrowing (in the form of rice or money) from family and friends in order to maintain food and education expenditure?
• Does the household receive any support from the health system (in terms of free or subsidized service fees and drugs, etc.)?
• What if any support has the household receive from the community? What type of support is most valued by the household?

The main sources of reference for constructing the household survey questionnaire were the Viet Nam Living Standard Survey 1997-1998 (VLSS) and the Viet Nam National Health Survey 2001-2002 (VNHS). Special attention was given to the income and expenditure sections of the VLSS. Sections on illness symptoms, health utilization, and healthcare expenditure of the VNHS were used since they were more detailed. In addition, the survey instrument had special sections looking specifically at the coping strategies and community support.

Two types of questionnaires were produced – one for households with a living PLWHA, and one for households with a deceased PLWHA. In general, two questionnaires covered similar information with the obvious amendments in the wording65, and the one for family with a deceased person with AIDS had an additional section on mortality. The questionnaires were administered mainly with the head of the households, as defined in the VLSS: the household head is usually the person with the highest income in the household.

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65 For example, instead of asking about “illness symptoms over the last 3 months”, the question to the household with a deceased member will be “illness symptoms 3 months before death”.

60
household, who makes major decisions for the household and knows about the economic and professional activities of each member of the household. Some specific sections were asked to the PLWHA and/or the main caregiver. The questionnaires were finalized after being pre-tested. Table 10 provides a summary of questionnaire content and intended respondent:

Table 10: Summary of questionnaire content

<table>
<thead>
<tr>
<th>Section</th>
<th>Content</th>
<th>Intended respondent</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 – household roster</td>
<td>General information on the household, number, age, and sex of each member</td>
<td>Household head</td>
</tr>
<tr>
<td>2a – household health expenditure</td>
<td>Total amount spent on health care incurred by every household members, including amount spent on purchase of health insurance, self-medication, and purchase of medical supplies</td>
<td>Household head</td>
</tr>
<tr>
<td>2b – household living conditions</td>
<td>Information on various household living conditions and ownership of durable goods</td>
<td>Household head</td>
</tr>
<tr>
<td>3 – income effects</td>
<td>HIV/AIDS specific information: loss of income for the sick (or deceased person), loss of income for the caregiver, household coping strategy and community support.</td>
<td>PLWHA</td>
</tr>
<tr>
<td>4 – health expenditure effects</td>
<td>HIV/AIDS specific information: health status, service utilization of PLWHA and associated healthcare expenditure.</td>
<td>PLWHA</td>
</tr>
<tr>
<td>5 – death of PLWHA</td>
<td>HIV/AIDS specific information: duration before death, funeral cost and household recovery</td>
<td>Household head</td>
</tr>
</tbody>
</table>

Results

General HIV/AIDS Situation in the Study Sites

Ho Chi Minh City

According to health officials in Ho Chi Minh City, the city is at the verge of a generalized epidemic with HIV infection rate among pregnant women attending ANC clinics approaching 1%. The prevalence is especially high among the high risk groups and the intermingling of unprotected sex and drug use among commercial sex workers creates the idle environment for rapid spread of the virus.

According to the report of the City Preventive Health Center on 15/9/2003, by 15/9/2003 the city recorded 13,849 accumulated HIV cases, among which 5,212 has developed into AIDS, and 2036 people have died. The HIV incidence is increasing, especially among young people. The city also sees the need for more attention and investment on the new area of HIV/AIDS: home-based care of PLWHA.

The two districts selected in this study share a common picture of HIV/AIDS with Ho Chi Minh City. As of end of 2002, District 10 recorded 489 HIV positive cases, of which 186 had died. The current number of HIV infected

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66 The questionnaires are available from the authors as their length precluded inclusion in this report.

67 This section is applied to households with deceased PLWHA only.
people was 141, among which the district is able to manage and counsel 81 cases. The remaining were either sent to Drug Treatment Centers or lost to follow up (report of District Health Centre, District 10).

District 10 has some funds allocated from the City People’s Committee for providing medicines to HIV positive people, whose names are in the control list of the district health centre. These are simple medicines, in most cases vitamins. The ceiling for each prescription is VND30 thousand and one person can receive free medicines up to 2 times a year. In 2003, the amount from City People Committee allotted to District 10 for this purpose is VND1.2 million. The health center may decide to use money from other sources to add to these amounts if they can.

In order to have their names in the control list of the district health center, the person needs to show test results. Majority people in the list are men. Most commercial sex workers, after being detected HIV positive, left the area to live somewhere else. The health center does not have the list of orphans from parents who had died of AIDS. Attempts to do have been abandoned because they have no means of assistance to provide for orphans once identified.

Other than the modest portion of free drugs, the only form of assistance from local authority and health center provided to PLWHA is occasional visits with some gifts, such as sugar and milk and psychological support.

**An Giang**

One special feature of An Giang is its location next to Cambodia. For years, the province had a large number of women crossing the border to Cambodia to work as commercial sex workers. Many of these women, upon returning home after several years, lead a “normal” life, getting married and having children, unaware of their HIV status. In this sense, the epidemic has also been generalized, penetrating the lives of husbands and children of these women. The pattern of transmission through intravenous drug use also exists in An Giang, but not as common as through sexual intercourse.

Official records from the Provincial Preventive Health Center showed that from 1993 to October 2003, the province had a cumulative number of 4,405 HIV positive cases. Among these, 1,904 had developed AIDS, and 1,572 had died. The infection rate is still increasing: 526 new HIV positive cases in the first 6 months of 2003 were reported, compared to 503 new cases in the first 6 months of 2002. Women accounted for 29% of all infected persons since the beginning of epidemic, but this proportion is increasing. In the first half of 2003, newly detected cases among women accounted for 31% of all cases. This is much higher than the average rate of Viet Nam.

In An Giang, the study was conducted in 4 communes of Long Xuyen – the provincial city. The City Preventive Health Center is currently controlling a list of 126 PLWHA. Previously, the city once had a program called QCT (manage, care and treatment), initiated by the National AIDS Standing Bureau (NASB) in 1996. One of the components of the program was to provide free drugs for the prevention of opportunistic infections. At present, the initiative by the NASB was over, but the city continues QCT program using provincial funds.
The peer education groups for commercial sex workers in Long Xuyen are quite strong and have various activities targeting the commercial sex workers. No peer education or “friends help friends” groups currently exist for the intravenous drug users.

**Thai Binh**

Thai Binh is a rural province in the North of Vietnam. It is quite well known for the large number of out-migration for work by adults. Although the HIV infection rate is not among the highest in the country, the trend is increasing. By the end of 2002, 853 cases have been detected, of which 143 developed AIDS and 81 had died.

The main route of transmission is intravenous drug use, being responsible for 75% of all cases. However, transmission through unprotected sex is on the rise, increasing from 27% of all cases in 2001 to 31% in 2002. Males are dominant among the infected people (88%).

Because out-migration for work among men living in the rural areas is very common, the rate of infection in the rural area is high — 70% of reported HIV positive cases came from the rural area.

Thai Binh does not have a program to provide free drugs for PLWHA. Occasionally, pregnant women were provided with anti-retroviral prophylaxis for the prevention of mother-to-child transmission. In general, no official channel of financial support has been reported. HIV/AIDS patients getting treatment at the commune health stations have to pay user fees and bear the drug costs themselves. Only patients who have tuberculosis are eligible to tuberculosis drugs, which were subsidized through the national program for tuberculosis.

**Quang Ninh**

By the end of 2002, 5,954 HIV positive cases have been detected, among which 615 AIDS cases and 440 AIDS deaths. Majority of HIV positive are male, accounting for 92%. IDU was responsible for roughly 70% of all the infected cases. The province receives many support programs by international organizations for HIV/AIDS. These programs focus especially on prevention as opposed to support to families of PLWHA. There appears to be subsidized drugs for opportunistic infections available in the hospitals. However, no drugs were provided to PLWHA at home as the case of two provinces in the South.

The case study was conducted in two wards in Ha Long City which have a medium number of HIV positive cases (Yet Kieu: 157 and Ha Lam: 202 as of 30/7/2003). As of May 2003 the Ha Long City reported seeing 1,958 HIV cases, of which 611 have developed AIDS and 681 had died.

One common feature in all the studied sites, especially An Giang, Thai Binh, and Ha Long is that many people were not aware of their HIV status until they developed advanced illness symptoms. As a result people died very quickly after detection of the status, in some cases just a week. The healthcare burden of HIV/AIDS therefore was not as great as it could be had the HIV status been known earlier. This factor needs to be taken into account when assessing the economic impact of HIV/AIDS.
Description of Study Population

Table 11 provides a general profile of the studied individuals in four provinces. In all, 45 deceased and 84 living PLWHAs were surveyed, making a total of 129 individuals. Majority of these people are IDUs (88/129 = 68%). This is higher than the national average of 63% reported for the year 2000 (MOH, 2001 – get more recent data). As mentioned in the method part, CSWs were probably underrepresented in our data. Table 2 shows that virtually only in Ho Chi Minh City and An Giang had the study team manage to interview some households with HIV positive CSWs. Except in An Giang, in no province was the study team able to find a deceased PLWHA who belong to the “not high risk” group.

Table 11: General profile of study population.

<table>
<thead>
<tr>
<th>Location</th>
<th>Alive PWAs</th>
<th>Deceased PWAs</th>
<th>Total PLWHA</th>
<th>Total households</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>IDU</td>
<td>CSW</td>
<td>Not “high risk”</td>
<td>IDU</td>
</tr>
<tr>
<td>Thai Binh</td>
<td>16</td>
<td>0</td>
<td>4</td>
<td>9</td>
</tr>
<tr>
<td>Ha Long</td>
<td>15</td>
<td>1</td>
<td>1</td>
<td>14</td>
</tr>
<tr>
<td>HCMC</td>
<td>17</td>
<td>7</td>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td>An Giang</td>
<td>6</td>
<td>6</td>
<td>9</td>
<td>1</td>
</tr>
<tr>
<td>Total</td>
<td>54</td>
<td>14</td>
<td>16</td>
<td>34</td>
</tr>
</tbody>
</table>

The 129 study subjects came from 125 households. Some households had 3 infected members, all of whom had died. However, not every case was recorded because some PLWHAs died rather long ago so that the living members failed to recall the information on those people. In such cases, the people were not included. As table 3 shows, majority of study subjects were males. The proportion of females was 25.6% (33/96) which is high compared to national rate (Table 12).

Table 12: Gender of study sample.

<table>
<thead>
<tr>
<th></th>
<th>Thai Binh</th>
<th>Ha Long</th>
<th>HCMC</th>
<th>An Giang</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>2</td>
<td>4</td>
<td>11</td>
<td>16</td>
<td>33</td>
</tr>
<tr>
<td>Male</td>
<td>27</td>
<td>27</td>
<td>28</td>
<td>14</td>
<td>96</td>
</tr>
</tbody>
</table>
The age of PLWHAs interviewed in this study range from 13 to 50. Figure 20 provides information on the mean age of the studied subjects in four provinces. The average for all four provinces is 31.5 years. PLWHAs in Ho Chi Minh City tended to be older than in other provinces. The difference in mean age across provinces, however, was not very large.

As Figure 21 shows, forty percent (n=52) PLWHA are currently married or were married before death. A large number of people had never been married and a significant number of people who were once married but separated. Although no statistical inference should be drawn here, it was observed that many of PLWHAs were abandoned by their spouses after the HIV positive status was disclosed.

In terms of education level, about fifty percent of male PLWHA finished grade seven and fifty percent of female respondents have completed grade five. Figure 5 shows the number of PLWHAs by field of occupation. Nearly half of all surveyed PLWHAs (n=53 out of 129) had an occupation. Other significant categories of occupation include service sector (working at hairdresser’s), small trading (selling fruits or lotto), farming, or short-term hired labor.

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68 The definition of occupation is something that respondent spends most of their time, either being paid or not.
Figure 20: Field of occupation of the PLWHAs.

It is important to note that majority of PLWHAs who had no occupation were IDUs. Many had never worked before and many others lost their job even before being contracted with HIV. The effect of HIV/AIDS in this picture therefore is confounded by the presence of intravenous drug use. This may be difficult to separate in the analysis.

Figure 21 Duration from HIV status detection and illness to death.

Figure 23 gives some insight of the subgroup of the study population, namely those who have died of AIDS. Twenty six out of 45 people died one year after the HIV status was detected. Majority of the PLWA died within one year after the onset of significant illness symptoms. The mean at death among 45 deceased people was 30, ranging from 13 to 50.

Expenditure Effects

Household health expenditure

The presence of a PLWHA in the household can have multidimensional effects on the total health expenditure of the household. Inevitably expenses for healthcare for the PLWHA him/herself should increase total health household expenditure. On the other hand, non-infected members may have
to sacrifice part of their own health care expenses for the infected person. In this case study households with a PLWHA tended to be poor, and have financial limitations on what they can spend on health care.

Household expenditure on healthcare was computed and compared with the level of household health expenditure reported in national surveys. The information on healthcare expenditure was collected 4 weeks retrospectively and covered all possible expenses of every household member, including expenses on in- and out-patient care, self-medication, general health check, and purchase of medical supplies. Note that the calculation includes only households with at least one living PLWHA to capture the actual effect of the presence of PLWHA in the household.

Eighty-three eligible households spent on average VND1,185 thousand (US$79) on healthcare in the period of 4 weeks preceding the survey (range: VND0 - VND22,420 thousand; US$0-US$1,495). The amount was smallest in An Giang and highest in Thai Binh, followed by Ho Chi Minh City. One of the reasons why healthcare expenditure was low in An Giang could be that quite a number of households in this province have poverty household book, and hence were exempted from fees.

<table>
<thead>
<tr>
<th></th>
<th>Thai Binh</th>
<th>Ha Long</th>
<th>HCMC</th>
<th>An Giang</th>
<th>All provinces</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>19</td>
<td>17</td>
<td>26</td>
<td>21</td>
<td>83</td>
</tr>
<tr>
<td>VND</td>
<td>1,764</td>
<td>812</td>
<td>1,655</td>
<td>382</td>
<td>1,185</td>
</tr>
</tbody>
</table>

The 1997-1998 Vietnam Living Standard Survey reported a per capita expenditure on healthcare over 4 weeks preceding survey of VND19.19 thousand (US$1.28). With the household size of 4.7 at the time, an average Vietnamese household spent VND90 thousand (US$6) a month, one thirteenth of the amount recorded here.

**Health status and health service utilization**

The survey recorded all illness episodes that the PLWHA had during 3 months preceding the survey or preceding death in the case where an AIDS death was reported. Out of the total sample of 129, only 18 people did not have any health problem. The remaining 111 had in total 153 illness episodes during the preceding 3 months. The average for the total sample was 1.2 illness episode. Highest number was recorded for An Giang and lowest – for Ha Long. As Table 13 shows, PLWHA during the last 3 months of their lives did suffer from more health problems than during other period.
Table 13: Average number of illness episodes of PLWHA 3 months preceding survey

<table>
<thead>
<tr>
<th></th>
<th>Thai Binh</th>
<th>Ha Long</th>
<th>HCMC</th>
<th>An Giang</th>
<th>All provinces</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dead PWA (n=45)</td>
<td>1.1</td>
<td>1.0</td>
<td>1.0</td>
<td>2.8</td>
<td>1.4</td>
</tr>
<tr>
<td>Alive PWA (n=84)</td>
<td>0.9</td>
<td>0.6</td>
<td>1.2</td>
<td>1.4</td>
<td>1.1</td>
</tr>
<tr>
<td>General (n=129)</td>
<td>1.0</td>
<td>0.8</td>
<td>1.1</td>
<td>1.8</td>
<td>1.2</td>
</tr>
</tbody>
</table>

Out of 153 illness episodes, the most frequent type of health problem was cough, followed by diarrhea and then non-specific symptoms such as fever and headache (Figure 7).

Figure 7. Most frequent types of health problem

Table 14 shows the average number of days the PLWHA was not able to perform usual activities during the period of 3 months preceding the survey or preceding death. The range is from zero to 90 days (i.e., all the time). Not surprisingly, the health status of the people before death appeared to be much worse than of the people who are still alive.

Table 14: Average number of days unable to perform usual activities during preceding 3 months.

<table>
<thead>
<tr>
<th></th>
<th>Thai Binh</th>
<th>Ha Long</th>
<th>HCMC</th>
<th>An Giang</th>
<th>All province</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dead PWA</td>
<td>45.0</td>
<td>28.8</td>
<td>51.6</td>
<td>66.7</td>
<td>46.2</td>
</tr>
<tr>
<td>Alive PWA</td>
<td>16.7</td>
<td>13.9</td>
<td>15.6</td>
<td>4.9</td>
<td>12.8</td>
</tr>
<tr>
<td>General</td>
<td>25.5</td>
<td>20.6</td>
<td>27.6</td>
<td>23.4</td>
<td>24.5</td>
</tr>
</tbody>
</table>

Among 153 illness episodes, 63 episodes (41%) did not end up being checked by a health professional. Main reasons for not using health services included incurable disease (n=15, 24%), no money (n=17, 27%), and mild illness not requiring professional check (n=25, 40%).

Table 9 shows the average volume of health care services used by PLWHA in a three-month period preceding survey or preceding death, measured by number of contact to health facility. The number ranged from zero (for both living and deceased PLWHA) to 10 contacts in three months for a living, and 20 contacts in three months for a dead PLWHA. As the table revealed, HIV
positive people made an extensive use of medical care in the stage of terminal illness.

Table 15: Health service utilization 3 months preceding survey or preceding death: number of contacts with health facility.

<table>
<thead>
<tr>
<th></th>
<th>Thai Binh</th>
<th>Ha Long</th>
<th>HCMC</th>
<th>An Giang</th>
<th>All province</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dead PWA (n=45)</td>
<td>2.4</td>
<td>2.7</td>
<td>4.0</td>
<td>3.2</td>
<td>3.1</td>
</tr>
<tr>
<td>Alive PWA (n=84)</td>
<td>3.4</td>
<td>2.1</td>
<td>2.2</td>
<td>1.3</td>
<td>2.2</td>
</tr>
<tr>
<td>General (n=129)</td>
<td>3.1</td>
<td>2.4</td>
<td>2.8</td>
<td>1.9</td>
<td>2.5</td>
</tr>
</tbody>
</table>

Due to small number of observations, we hesitate to make any comparison among studied provinces. Still, PLWHAs in Ho Chi Minh City appeared to use services more before death. In Ho Chi Minh City the availability of services may explain, in part, this high volume of service use. The utilization of services, of course, is confounded by many factors, including not only availability and affordability of services, but also stage of HIV status and trade off people make among various priorities, treating the HIV infected person is only one of them.

Just for reference, results of the 2001-2002 VNHS show that an average Vietnamese person has 4.2 outpatient contacts and 0.062 inpatient admissions a year, making the total number of contacts in 3-month period of 1.06. This represents about a half of the service volume used by a living PLWHA, and a third of that of a PWA before death.

Figures 8 and 9 display the weight of most common type of health facilities used by PLWHAs. Not surprisingly, in the stage of terminal illness, people tend to use higher level health facilities (provincial hospitals accounted for 54% of all contacts occurred 3 months before death, compared with only 31% in other period). Among PLWHAs who are not terminally ill health facilities in the proximity (CHC and private clinics) are preferred.
The tendency to choose service of high complexity for severe illness is reflected in the household stated reason for choosing a specific health facility: number one reason was “trust in the quality”, followed by “convenient time and location”.

### Health expenditure for the PLWHA

The survey collected information on all types of health expenditure incurred by a PLWHA in 3 months preceding survey or preceding death, including expenses on self-medication and travel cost to health facilities. Total amount ranges from zero (for both living and dead PLWHA) to more than VND6 million (US$400) for a living PLWHA, and VND36 million (US$2,400) for a PWA who had died. The average figures for each province are shown in Table 16.

#### Table 16: Health expenditure 3 months preceding survey or preceding death (thousand VND).

<table>
<thead>
<tr>
<th></th>
<th>Thai Binh</th>
<th>Ha Long</th>
<th>HCMC</th>
<th>An Giang</th>
<th>All province</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dead PWA</td>
<td>9,247</td>
<td>1,740</td>
<td>2,520</td>
<td>7,047</td>
<td>4,528</td>
</tr>
<tr>
<td>Alive PWA</td>
<td>1,144</td>
<td>505</td>
<td>723</td>
<td>228</td>
<td>656</td>
</tr>
<tr>
<td>General</td>
<td>3,659</td>
<td>1,062</td>
<td>1,322</td>
<td>3,659</td>
<td>2,006</td>
</tr>
</tbody>
</table>

There was substantial variation across provinces. The small number of observations makes the average susceptible to outlying values. The low expenditure level in An Giang may be explained in part by the fact that quite a number of households in this province have poverty household book. Many of
the study participants in An Giang and Ho Chi Minh City received free drugs from commune health centers. However, it is important to note that the drugs to treat opportunistic infections are useful only when people have not reached the critically ill period. Hence it has more meaning in the “alive PWA” category. Likewise, even with poverty household book, if households choose to come to hospitals in other provinces or at higher level (regional and central), they still have to pay the full fee.

The Vietnam National Health Survey (VNHS) 2001-2002 reported that, on average, Vietnamese spend VND217 thousand (US$15) a year on healthcare out-of-pocket. This would mean nearly VND55 thousand (US$4) in a three-month period.

One question of interest is the whole magnitude of expenditure incurred by the households for HIV positive person. We included in the survey a question on total health expenditure from the detection of HIV status till the present (or death). Recall bias influenced the response to this question, especially in cases where respondents had been infected for nine or ten years. Even for those being infected for shorter period of time, it is impossible to remember all the expenses. T should therefore be noted that the data reported here are presented present only provide an idea of the relative magnitude, not the exact expenditure. The figures range from zero to VND300 million (US$20,000) for households with living PLWHA and from VND50 thousand (US$3.33) to VND70 million (US$46,667) for households with at least one member who had died of AIDS. These are huge amounts, even for a better off Vietnamese households.

Table 17: Average expenses on health care for the PWA from the infection time until present or until death (household level analysis): thousand VND.

<table>
<thead>
<tr>
<th></th>
<th>Thai Binh</th>
<th>Ha Long</th>
<th>HCMC</th>
<th>An Giang</th>
<th>All province</th>
</tr>
</thead>
<tbody>
<tr>
<td>Household with at least one dead PWA (n=42)</td>
<td>14,825</td>
<td>3,638</td>
<td>7,273</td>
<td>9,975</td>
<td>8,101</td>
</tr>
<tr>
<td>Household with alive PWA(s) (n=82)</td>
<td>5,334</td>
<td>2,207</td>
<td>2,0542</td>
<td>4,126</td>
<td>9,013</td>
</tr>
<tr>
<td>General (n=124)</td>
<td>8,146</td>
<td>2,827</td>
<td>16,003</td>
<td>5,739</td>
<td>8,704</td>
</tr>
</tbody>
</table>

The fact that households with a living PLWHA reported spending more compared to households with someone having died of AIDS may seem counter-intuitive. However, this could well be the fact because many people who had died were diagnosed very late in their illness. In our sample, many HIV positive people had been infected for as much as 9-10 years after infection. The accumulated health expenses incurred therefore are hard to estimate. Generally, the expenses exhausted the resources of many households. Those who were once better off were drawn into bottom of the

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The comparison needs to be made with caution since VNHS was based on 12 month recall, which is usually underreported.
society. On the other hand, in many cases PWA died very quickly. The time lag from the detection of HIV status and first significant illness symptoms to death was so short that did not induce large healthcare expenditure. As awareness of HIV/AIDS increases and as testing become more widely available, the time between diagnosis and death may be longer and the true impact of HIV/AIDS on households may become larger.

**Funeral Expenditure**

Often, because the people in the final stage of AIDS have a rather scary appearance and because families have become exhausted, they tend to bury the deceased AIDS patients soon after death. Households reported that they did not organize as big funeral ceremony for deceased PLWHA as they would usually do for another household member. This tendency appeared to be more pronounced in visited households in the South, although no definite conclusion should be drawn. There is a reason therefore to believe that funeral expenditure for a PWA would be less than that of other people although we don’t have any data in hand for comparison.

Table 10 below shows the range and average value for funeral expenditure for 44 deceased PWA in our study. Interestingly, the amount for a dead female PLWHA was only a little more than half of that for a male PLWHA. The average (VND3,380 thousand; US$225) is not a small amount, especially for households which have been drawn exhausted after paying for medical care for the member before death.

<table>
<thead>
<tr>
<th></th>
<th>Average</th>
<th>Minimum value</th>
<th>Maximum value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female PLWHA (n=11)</td>
<td>2,012</td>
<td>0</td>
<td>4,000</td>
</tr>
<tr>
<td>Male PLWHA (n=33)</td>
<td>3,836</td>
<td>100</td>
<td>8,000</td>
</tr>
<tr>
<td>General (n=44)</td>
<td>3,380</td>
<td>0</td>
<td>8,000</td>
</tr>
</tbody>
</table>

**Income Effects**

In this section we will assess the impact on household income through four possible channels: income lost by PLWHA him/herself due to losing a job, income lost by PLWHA due to reducing money earning hours worked, income lost by the people giving care to the PLWHA due to losing job, and income lost by the care giver(s) to due reducing money earning hours worked. Each will be considered in turn.

**Income loss of HIV infected person**

Out of 129 infected persons surveyed, only 42 either are currently working or were working at the time of death. Among the 87 remaining people, 22 never
worked before. The 22 people who have not worked were mainly IDUs who were rather young. As the matter of fact, many surveyed subjects when straight out of high school and becoming addicted, and so have never joined the work force.

Sixty five of study subjects reported losing their job as a result of being HIV positive. The majority attributed the reason to “too weak to work” (66 percent, n=43). A smaller number said they were still healthy at the time they lost job, but were not allowed to work due to their HIV status. Worsening health status appeared to be mainly responsible for the loss of job by the HIV infected people.

The average monthly earning of people who lost job when their HIV status was detected was VND750 thousand (US$50). Among 42 PLWHA who were currently working or were working before death, 23 said their income was reduced since the HIV status was detected. In most cases the loss in income was attributed to worsening health status (n=20). The mean reduction in monthly earnings was similar to the average earning (VND618 thousand; US$62).

**Income loss by the caregiver**

Out of 129 PLWHA surveyed, 31 persons did not require a caregiver. On the other hand, several participants needed support and assistance from several household members. The average number of care giver per PLWHA was 0.9, meaning nearly one person was needed to care for one PLWHA. In all, 116 people were recorded as the main care givers for 98 PLWHA who needed care. On average, a caregiver spends nearly 5 hours a day caring for the PLWHA.

On whom does the burden of care fall in the household? As Figure 26 shows, in most cases, the work caring for the infected person felt on the shoulders of the women in the family. Mothers accounted for 59 out of 116 cases. The second most cited person was wife (18 cases), followed by father (12 cases), and then sister (8 cases). Other categories of people on the list include grandparents, brothers, and children. It is interesting that children, both daughters and sons, are not the main care givers in this case. However, it is important to note that nearly half of the PLWHA have not been married, hence have not had children.

Twenty-eight care givers (24%) reported that they had to give up job in order to spend time with infected person. The average monthly income of these 28 people was VND488 thousand. (US$33) In addition, 42 persons experienced income reduction with a slightly
reduced amount of VND478 thousand (US$31) a month. It appeared from this figure that those people who earn less would be the first who give up job to care for the sick people in case of need. More than 50% of care givers said they did not have to take any day off from work to care for the sick people. The mean number of days off work taken by all care givers was 14 days. This may be because many of the caregivers are mothers and wives who, while not sacrificing work days, may have to sacrifice household chores, entertainment, or social activities.

**Household coping with loss of income**

In general, households start their struggle right at the time when a member’s HIV status is known. In the survey we distinguished several specific episodes when coping is required: coping with income loss, coping with health expenditure and funeral cost. It is important to note however, that household coping is a persistent and continued process, and sometimes it is impossible to distinguish between coping strategies for different impacts.

Table 19 lists the different strategies households adopted to cope with the loss of income caused by the presence of a HIV infected person in the household. This can be loss of income by the infected person him/herself and/or by the care giver. Borrowing money is the most common form of coping, to be followed by various consumption smoothing strategies.

**Table 19: Household coping with loss of income.**

<table>
<thead>
<tr>
<th>Coping strategies</th>
<th>Number of households</th>
<th>Total number of households</th>
</tr>
</thead>
<tbody>
<tr>
<td>Borrow money from friends and relatives</td>
<td>45</td>
<td>125</td>
</tr>
<tr>
<td>Cutting down on food consumption</td>
<td>36</td>
<td>125</td>
</tr>
<tr>
<td>Borrow money with interest</td>
<td>34</td>
<td>125</td>
</tr>
<tr>
<td>Cutting down on health expenditure of other household members</td>
<td>32</td>
<td>125</td>
</tr>
<tr>
<td>Selling assets, including production means</td>
<td>26</td>
<td>125</td>
</tr>
<tr>
<td>Elderly going out for earned job</td>
<td>22</td>
<td>125</td>
</tr>
<tr>
<td>Selling land/house</td>
<td>7</td>
<td>125</td>
</tr>
<tr>
<td>Children being taken from school</td>
<td>4</td>
<td>125</td>
</tr>
<tr>
<td>Children being sent out for earned job</td>
<td>3</td>
<td>125</td>
</tr>
<tr>
<td>Sending children away for foster care</td>
<td>2</td>
<td>125</td>
</tr>
<tr>
<td>Receive loan from credit programs</td>
<td>2</td>
<td>125</td>
</tr>
</tbody>
</table>

A observation that is of concern is that quite a number of elderly have to go out for earned employment to make up for the loss of income by a prime-aged adult. In the field, we met with old men and women who sold vegetables and driving tricycles to cover the household’s basic expenses. The immediate
impact on children was not clearly evident. Note that not all households or infected people in the sample had children.

**Household coping to health expenditure for the infected person**

When asked about the source of money to pay for medical expenses of the PLWHA, only 46 households said they pay from family savings. Eighteen households received fee exemption or reduction from health facilities. Borrowing remains the most common reaction as well as and consumption reduction.

**Figure 25: Main sources of payment to health expenditure.**

Coping with funeral expenditure/recovery

As stated in the expenditure effects section, average funeral expenditure among 45 deaths reported in this survey was VND3,380 thousand (US$255). This could be a huge amount for a household who has been drained exhausted after a long period caring for the HIV positive person. This is also a one-time payment which could create another shock to the households and draw households into deeper debt.

In 41 out of 45 did the households receive support in cash or in-kind when the PWA died. Most of the time, the support was in the form of contributions from neighbors and relatives attending the funeral ceremony. It is a very common practice in Viet Nam that people attending funeral ceremony give the family of the deceased some amount of money. When the deceased is a PLWHA, the ceremony is often small. The contribution from attendees therefore could be smaller than funeral ceremony of people dieing from other causes. The average amount received by households from help was VND2,500 thousand (US$167). This makes up 74% of the average funeral expenses reported in the previous section.
Table 20: Main sources of money to pay for funeral expenditure.

<table>
<thead>
<tr>
<th>Coping strategies</th>
<th>Number of households</th>
<th>Total number of households/dead PWA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Help from relatives</td>
<td>18</td>
<td>45</td>
</tr>
<tr>
<td>Help from friends</td>
<td>16</td>
<td>45</td>
</tr>
<tr>
<td>Borrow money</td>
<td>20</td>
<td>45</td>
</tr>
</tbody>
</table>

In eight cases, remittance from relatives living far away was reported. No insurance payment was recorded. Retirement funds and employer’s payment was recorded in 3 and 1 cases respectively. The role of church or other religious as well as government organizations was minimal in our studied provinces. Only two households reported receiving some support in cash from local women’s union.

Some deaths left the living members in the households with immediate difficulty leading their lives and some did not. In eighteen out of 45 deaths, households reported having no difficulty purchasing basic services such as education, health care, food, travel mean, electricity and so on. However, among the remaining, several had difficulty buying more than one type of service.

Table 21: Major services households felt difficulty to meet after the death of PWA.

<table>
<thead>
<tr>
<th>Service</th>
<th>Number of households</th>
<th>Total number of households/dead PWA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Food</td>
<td>16</td>
<td>45</td>
</tr>
<tr>
<td>Education</td>
<td>8</td>
<td>45</td>
</tr>
<tr>
<td>Healthcare</td>
<td>7</td>
<td>45</td>
</tr>
</tbody>
</table>

Formal support available to households with PLWHA

Previous sections reported common types of informal support (friends, relatives, money lenders) to households with a PLWHA. In this section, we report the existence of formal channels of support which are at work in the studied provinces for households with PLWHA.

Two kinds of support are distinguished: support to the PLWHA and support to the other family members because they have a PLWHA in the households. The two only examples of formal support were encountered in the study locations: the poverty book for the household and free drugs for the PLWHA him/her self.

In principle, households having poor household book should be able to receive free health care and reduced education fee for all members. It is not clear if households were granted the book because of the presence of
PLWHA or because they were poor to begin with\textsuperscript{70}. In fact, we met with several cases where households reported once having poverty books but the books later on have been revoked (and granted to other households in the community which were also poor).

Figure 26 and Figure 27 provide information on the absolute numbers of households in 4 provinces who reported receiving poverty book or free drugs at CHC for PLWHA. The numbers were quite small, especially for the two provinces in the North. In Thai Binh, the study team did meet with households saying that they were eligible for the book, but have not been granted it for so long. In all, 23 out of 125 visited households had poverty book at the time of survey.

Figure 26: Households with a poverty book. 

Figure 27: Households having access to free drugs from CHC for PLWHA.

The pattern of free drugs provided by the commune health center was very similar to that of poverty book. The only case in Thai Binh, which reported receiving free drugs for HIV was a pregnant woman. An Giang appears to be the best among the provinces thanks for the QCT program mentioned before. In all four provinces, 32 households reported receiving free drugs for PLWHA.

An observation from the field is that many households expressed great appreciation with the free drugs provided by the local CHC. These drugs are actually very cheap and in most cases just simply vitamins. In HCMC, the cap for each prescription is 30 thousand dong. Many better off households do not need this. However, for the poor households, this represents a significant material support. More importantly, the psychological support is felt great. The fact that PLWHA come to CHC to receive drugs occasionally (in case in HCMC) or every month (in An Giang) fosters regular contact to health

\textsuperscript{70} We did include such a question in the questionnaire on whether households received free health care and education as the result of having a PLWHA. There were however, inconsistencies with other questions and hence were not reported here.
professionals and facilitates counseling and exchange of information between the patient and health professional.

The survey included one question on: what kind of support would the households want the most in the next 12 months? It is not surprising that the biggest concern was healthcare for the HIV positive people. Most households wished to have access to drugs and treatment at hospitals for the PLWHA. In addition, financial difficulty can be felt clearly as most households expressed their need for money.

**Figure 28: Types of support most wanted by the households.**

Households with a person who had died of HIV/AIDS were asked how long it took them to recover from the consequences of the illness and the death of the PLWHA. Fifty percent of these households reported to recover with 9 months after the death of the PLWHA. The recovery time ranged from 2 months to 25 months. However, there are extreme cases where the aftermath of death lasted very long. It was reported previously that for those PWA who had died, the time between diagnosis and death was relatively short. Also, in the previous section it was reported that households with a living PLWHA had larger AIDS-related expenditures than households with a person who had already died (see Table 17). While this may suggest that households in general are resilient, households are likely to under-estimate the indirect costs associated with the income and expenditure effects of HIV/AIDS. For example, the long term costs of reduced consumption expenditure, for example, on nutrition and education. Based on the case study data alone, it was not possible to quantify the responsiveness of food and education expenditure to increased health spending. In order to gain better insight into this issue, econometric analysis using the VLSS was done. The findings are reported in Technical Annex I.
Limitations and Recommendations for Refinement

In assessing the magnitude of the impact, there are methodological challenges that need to be addressed. The first challenge is to isolate the direction of the effects. Some studies show a negative association between income and having a person with HIV/AIDS in a household (Lundberg et al. 2000). This may be interpreted as poor households are more likely to have someone with HIV/AIDS, or that HIV/AIDS causes households to become poorer. The channels of the income and expenditure effects indicate that it is plausible that HIV/AIDS has a negative impact on household income as well as consumption. However, failing to isolate the potential (reverse) effect that poor households may be more likely to have someone with HIV/AIDS, the impact of HIV/AIDS on household welfare may be over-stated. These effects can only be evaluated and isolated in a survey methodology is applied and were thus largely unaddressed in this study.

A purposive sampling approach was used in the case study. This approach makes the study highly susceptible to selection bias. There are certain types of households with PLWHA which the study team could not gain access to. Households of higher socio-economic status were difficult to involve in the sample. With a highly sensitive and stigmatized issue such as HIV/AIDS, this problem is more difficult. Although the study team had tried to include households with varied economic conditions, it is possible that the higher income households were not reached. The further category of PLWHA who was hard to reach was sex workers. Often, this is a rather mobile population, who do not usually engage in sex trade in their home provinces. Conversation with key informants in the field revealed that when a sex worker was informed of her HIV (positive) status, she would move to live in a different place and hence became lost to follow up. In all provinces, except An Giang, the study team was faced with great difficulty identifying a household with sex worker to visit.

This is the first attempt to conduct a study of the household impact of HIV/AIDS in Viet Nam and it inevitably suffered from some shortcomings. For example, the questionnaires were quite detailed and insufficient time was available for data collection. While the challenges of doing a probability sample survey remains, it may be advisable to increase the sample size in order to ensure that categories that were under-represented in this case study sample are in fact included.
Appendix D: Case Study of the Impact of HIV/AIDS on Hospital Costs

The Household Impact Case Study revealed that by far the largest burden on households with a PLWHA is increased healthcare costs. This is not surprising given the large out-of-pocket payments for healthcare that households in Viet Nam face. One of the most urgent forms of assistance requested by households of a PLWHA was assistance with healthcare payments and the provision of healthcare for the PLWHA. In order to recommend a policy response to this situation it is critical to know what is the magnitude of healthcare costs of PLWHAs. To this end a case study was conducted and this information was used to project what the costs are of providing a basic level of care to people with HIV/AIDS.

Aim

The aim of the case study was to cost the direct and indirect costs of in- and out-patient care for PLWHAs in order to arrive at a unit cost per in-patient bed day and unit cost per out-patient visit for different HIV/AIDS clinical stages.

Theoretical Framework

The following steps describe the general approach that was used in the analysis:

1. The cost assessment was started by calculating the direct costs of an in-patient bed day and an out-patient visit. The direct unit costs were calculated by adding the most important cost categories, j, where j = 1 for personnel costs, j = 2 for equipment costs, j = 3 for drug costs, j = 4 for medical supplies, and j = 5 for diagnostic costs per in-patient bed day (p = 1).

\[
DC_p = \sum_{j=1,2,3,4,5} DC_{p,j} = DC_{1,1} + DC_{1,2} + DC_{1,3} + DC_{1,4} + DC_{1,5}
\]

Do the same for out-patient visit (p =2).

\[
DC_p = \sum_{j=1,2,3,4,5} DC_{p,j} = DC_{2,1} + DC_{2,2} + DC_{2,3} + DC_{2,4} + DC_{2,5}
\]

2. Indirect costs were inferred from the ratio of indirect to direct costs (Ratio) from previous hospital studies done in Viet Nam. This is done for in-patient bed day unit cost (p=1) and out-patient visit unit costs (p=2).

\[
IDC_p = \text{Ratio} \times DC_p
\]

For p=2: \( IDC_p = \text{Ratio} \times DC_2 \)

3. Unit cost per in-patient bed day (C) = direct unit cost per in-patient bed day + indirect unit cost per in-patient bed day for each opportunistic infection, i:
\[ C_p = \sum_{i=1,2,3} (DC_p + IDC_p) \]

\[ = (DC_1 + IDC_1) + (DC_1 + IDC_1) + (DC_1 + IDC_1) \]

where \( p = 1 \) per in-patient bed day.

4. Unit cost per out-patient visit = direct unit cost per out-patient visit + indirect unit cost per out-patient visit for each opportunistic infection, i.

\[ C_p = \sum_{i=4,2,3} (DC_p + IDC_p) \]

\[ = (DC_2 + IDC_2) + (DC_3 + IDC_3) + (DC_3 + IDC_3) \]

where \( p = 2 \) per out-patient visit.

<table>
<thead>
<tr>
<th>Unit cost per in-patient bed day</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct unit costs</td>
</tr>
<tr>
<td>Indirect unit costs</td>
</tr>
<tr>
<td>Total indirect costs</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td><strong>Personnel</strong></td>
</tr>
<tr>
<td>----------------</td>
</tr>
<tr>
<td>7</td>
</tr>
</tbody>
</table>

**DC_p**. \( DC_{1,1}, DC_{1,2}, DC_{1,3}, DC_{1,4}, DC_{1,5}, DC_{1,6} \)

<table>
<thead>
<tr>
<th>Ratio</th>
<th><strong>IDC_1</strong></th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Unit cost per out-patient visit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct unit costs</td>
</tr>
<tr>
<td>Indirect unit costs</td>
</tr>
<tr>
<td>Total indirect costs</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td><strong>Personnel</strong></td>
</tr>
<tr>
<td>----------------</td>
</tr>
<tr>
<td>16</td>
</tr>
</tbody>
</table>

**DC_p**. \( DC_{2,1}, DC_{2,2}, DC_{2,3}, DC_{2,4}, DC_{2,5}, DC_{2,6} \)

<table>
<thead>
<tr>
<th>Ratio</th>
<th><strong>IDC_2</strong></th>
</tr>
</thead>
</table>

**Methodology**

**Data Collection**

One hospital was selected for the study. For Dong Da District Hospital, which is assigned to provide medical care and treatment to Hanoi PLWHAs, was selected. While this is a district hospital, it is quite a large district hospital, of similar magnitude as provincial hospitals in other provinces. The necessary permission was sought well in advance with the necessary authorities. HIV testing was done at the Hanoi Center for Preventive Medicine the relevant staff of Hanoi Center for Preventive Medicine were involved in the costing study.

Preliminary review of data on HIV/AIDS patients from Dong Da District Hospital showed that the various opportunistic infections were distributed
more or less evenly by frequency (Table 26). To capture direct cost variations across opportunistic infections, a sample of records was chosen that is large enough to cover the whole range of opportunistic infections and to reflect the frequency distribution of opportunistic infections. Taking into account resources available for the case study, 30 patients were considered a reasonable size for each inpatient/outpatient sample.

**Table 22: HIV/AIDS-related opportunistic infections among PLWHAs**

<table>
<thead>
<tr>
<th>Opportunistic infection</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pneumonia</td>
<td>15.20%</td>
</tr>
<tr>
<td>Tuberculosis of lung</td>
<td>14.10%</td>
</tr>
<tr>
<td>Fungal infection</td>
<td>13.30%</td>
</tr>
<tr>
<td>Exhaustion</td>
<td>8.20%</td>
</tr>
<tr>
<td>Chronic diarrhea</td>
<td>6.60%</td>
</tr>
<tr>
<td>Bronchitis</td>
<td>3.50%</td>
</tr>
<tr>
<td>Liver inflammation</td>
<td>3.10%</td>
</tr>
<tr>
<td>Zone</td>
<td>2.70%</td>
</tr>
<tr>
<td>Cirrhotic/degraded liver</td>
<td>2.30%</td>
</tr>
<tr>
<td>Dysentery caused by bacillus</td>
<td>2.30%</td>
</tr>
<tr>
<td>Fever caused by virus</td>
<td>1.60%</td>
</tr>
<tr>
<td>Bubo tuberculosis</td>
<td>0.80%</td>
</tr>
<tr>
<td>Other opportunistic infections</td>
<td>26.20%</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>100.00%</strong></td>
</tr>
</tbody>
</table>

Source: Report of the Department for Tropical Diseases, Dong Da District Hospital

The preliminary discussion with Dong Da Hospital clinicians also revealed that most PLWHAs were hospitalized when they are in WHO clinical stages 3 and 4. Due to limitation of diagnosis equipment and resources, distinctions between the two clinical stages 3 and 4 are often not made. In addition, the cost implications are similar for the stage 1 and stage 2. The study therefore estimated the unit cost of an inpatient bed-day and outpatient visit for two combined groups of HIV/AIDS patients: (i) those in clinical stages 1 and 2 (i.e., early stage patients); and (ii) those in clinical stages 3 and 4 (i.e., late stage patients). No patients are usually hospitalized during stages 1 and 2, Therefore, three groups of HIV/AIDS inpatients and outpatients were selected for costing as shown in Table 27.

**Table 23: Samples for data collection**

<table>
<thead>
<tr>
<th>Stage 1&amp;2</th>
<th>In-patient</th>
<th>Out-patient</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stage 3&amp;4</td>
<td>30</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td>NO</td>
<td>15</td>
</tr>
</tbody>
</table>
Cost Estimation

The direct costs of treating HIV/AIDS were estimated for a sample of in-patients and a sample of out-patients at different clinical stages. Due to the time constraints, this study used existing information on the indirect hospital costs.

Direct Costs

The categories of direct costs that were considered include: (i) costs of drugs and consumables (e.g., fluids, blood, surgical gloves etc) including drugs purchased by patients outside of the hospital; (ii) direct personnel costs; and (iii) costs of diagnostic images and laboratory tests including materials and staff cost.

The costs of drugs and medical consumables were collected using the in-patient records which were available at the General Planning Department and outpatient records which were kept at the Department for Tropical Diseases. Unlike the inpatient records which had all information on drugs and consumables provided by the hospital and purchased by inpatients outside the hospital, the out-patients records had only brief notes on outpatient visits and major HIV/AIDS drug prescriptions indicated. Additional interviews with the responsible medical staff were required to recall opportunistic infections treated and drugs indicated for each sampled outpatient. The drug and consumables cost was then converted to daily bed rate for inpatients and per visit for outpatients.

The direct personnel costs were derived from monthly departmental payment records of the Tropical Diseases Department which provided treatment of HIV/AIDS. Salary deductions for health and social insurance were added back, and the employer contributions (totaling 19 percent of salary fund) to social and health insurance and trade union membership were also allocated back to total personnel cost of the department. Distributions to staff from user fee revenues (called 'monthly bonus') were also included. The total direct personnel costs then were converted to daily bed rate for inpatient costing.

Personnel costs of an outpatient visit were estimated based on consideration of average staff time spent on a visit. According to interviews with responsible medical staff of Dong Da hospital, a visit of HIV/AIDS outpatient normally lasted an hour, with some exceptions when a visit might last half a day. Hanoi Department of Health (DOP) had fixed outpatient visit charge at the level of about 0.4 bed-day staff cost. The DOP fixed outpatient visit charge was taken as an estimate of the staff cost of an outpatient visit.

Direct Unit cost of an image diagnosis or laboratory test includes personnel cost and material cost. The annual cost of hospital staff in the para-clinical departments was estimated from monthly departmental payment records. Personnel cost of an image or test was obtained by allocating the annual cost of the para-clinical department staff to annual output of the department.
A previous study (ADB Study 6 - Health Costing) suggested that the current billing prices for image diagnoses and laboratory tests are reasonably good estimates of the actual cost of diagnostic materials. List of billing prices for image diagnoses and laboratory tests was obtained from relevant para-clinical departments of Dong Da hospital.

According to MOH regulations, all PLWHAs have to be tested with three standard tests (including Quick test, Serodia-HIV and ELISA tests) at Hanoi Center for Preventive Medicine. Many PLWHAs also have CD4 tests done by the Laboratory of 108 Military Hospital. The cost of these tests were calculated separately based on interviews with the medical staff of Hanoi Center for Preventive Medicine and 108 Military Hospital and added to the total unit cost of HIV/AIDS treatment. A review of existing data on laboratory equipment costs and depreciation was also done and incorporated in laboratory test costing.

**Indirect Costs**

Total indirect costs were estimated using the total direct costs as just described and cost structure obtained in the previous study at Xanh Pon Hospital. The implicit assumption made here is that cost structures of the two hospitals are similar. Table 28 presents the cost structure assumed for Dong Da District Hospital.

**Table 24: Estimated total indirect costs**

<table>
<thead>
<tr>
<th>Costs items</th>
<th>Xanh Pon Hospital* % of total unit cost</th>
<th>Dong Da District Hospital % of total unit cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drugs &amp; consumables</td>
<td>44.00%</td>
<td></td>
</tr>
<tr>
<td>Diagnostics**</td>
<td>11.30%</td>
<td></td>
</tr>
<tr>
<td>Clinical staff</td>
<td>15.10%</td>
<td></td>
</tr>
<tr>
<td>TOTAL DIRECT COSTS</td>
<td>70.40%</td>
<td>70.40%</td>
</tr>
<tr>
<td>Indirect (overhead) costs</td>
<td>17.50%</td>
<td></td>
</tr>
<tr>
<td>Depreciation equipment</td>
<td>8.40%</td>
<td></td>
</tr>
<tr>
<td>Depreciation buildings</td>
<td>3.60%</td>
<td></td>
</tr>
<tr>
<td>TOTAL INDIRECT COSTS</td>
<td>29.60%</td>
<td>29.60%</td>
</tr>
<tr>
<td>Total cost per case</td>
<td>100.00%</td>
<td>100.00%</td>
</tr>
</tbody>
</table>

* Average unit cost of five diseases - bronchitis diarrhea infections, brain injury in traffic accidents, appendectomy, and neonatal care.
** Diagnostic costs include materials and staff costs.

**Utilization Rate Estimates**

The average number of in-patient bed-days in 2002 has been obtained using the inpatient registration records of the hospital. The average number of outpatient visits per year has also been estimated based on the outpatient sample of 30 patient records.

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71 ADB-MOH Technical Assistance project Making Health Care more Affordable for the Poor. Health Financing in Vietnam, Study 6 - Costing of Health Services by Fabricant S.J. and Uyen V.N., 6-2003
Registration of HIV/AIDS outpatient admission is not maintained systemically in Dong Da District Hospital. The Annual Report of the Department for Tropical Diseases estimated that the Department admitted about 100 outpatients per year. Most of the outpatients were in stages 3&4 of disease progression.

Results

Direct and Indirect Costs

As alluded to before, the in- and out-patient costs apply to two different populations of patients. On the one hand are those with the resources to care for the person at home, buy the medications and periodically visit the hospital for out-patient care. On the other hand are patients who have little resources or no home support and are admitted as in-patients. For this reason the distinction between in- and out-patient care is not as has been done in other studies that have costed the impact of HIV/AIDS on the health sector. Consequently, the approach originally proposed had to be modified.

The results of the costing of HIV/AIDS treatment and care in Dong Da District Hospital are summarized in Table 25. Total direct cost of daily treatment and care of a person with AIDS (WHO stages 3 or 4) was VND116 thousand (US$7.7) excluding food. Average number of in-patient bed-days required per year was 12.41 bed days. Total direct cost per in-patient visit was VND2,466 thousand (US$164.4) and the average number of in-patient visits was 4.97 visits per year (Table 25).

A detailed hospital costing study found that direct costs account for 70.5 percent of the total cost (Asian Development Bank 2003). Using this same proportion, indirect costs were estimated to be VND48,500 (US$3.2) daily and the total in-patient costs per bed-day are VND 164,000 (US$11). For the outpatient sample, hospital overhead costs and building depreciation were assumed to be zero.

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72 In other studies each PLWHA is assumed to have a number of in- and out-patient visits, depending on the stage of the disease.
73 Assuming an exchange rate of USD1=VND15,000.
74 However, we recognize that an out-patient visit should incur some overheads of the hospital (registration, consumption of electricity and water etc.) and occupy hospital office. The equipment depreciation is estimated under the assumption that the cost structure of Xanh Pon Hospital holds for Dong Da District Hospital and equipment depreciation accounts for 8.4 percent of the total costs. As Table 6 shows, depreciation of equipment per outpatient visit is estimated to be VND 248,000 (US$16.5), resulting in total outpatient costs per visit equaled VND 2,714,000 (US$180.9).
Table 25: HIV/AIDS in-patient costs per bed-day and out-patient costs per visit\textsuperscript{75}

<table>
<thead>
<tr>
<th>Cost items</th>
<th>Assumed structure of unit cost\textsuperscript{76}</th>
<th>Inpatient costs per bed-day VND</th>
<th>Outpatient costs per visit VND</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drugs &amp; consumables</td>
<td></td>
<td>58,518</td>
<td>2,125,261</td>
</tr>
<tr>
<td>Diagnostics</td>
<td></td>
<td>39,712</td>
<td>333,581</td>
</tr>
<tr>
<td>Clinical staff</td>
<td></td>
<td>17,630</td>
<td>7,000</td>
</tr>
<tr>
<td>TOTAL DIRECT COST</td>
<td>70.40%</td>
<td>115,860</td>
<td>2,465,843</td>
</tr>
<tr>
<td>Indirect (overhead) costs</td>
<td></td>
<td>0</td>
<td>247,972</td>
</tr>
<tr>
<td>Depreciation of equipment</td>
<td></td>
<td>8.40%</td>
<td></td>
</tr>
<tr>
<td>Depreciation of buildings</td>
<td></td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>TOTAL INDIRECT COST</td>
<td>29.50%</td>
<td>48,481</td>
<td>247,972</td>
</tr>
<tr>
<td>Total unit cost</td>
<td>100.00%</td>
<td>164,341</td>
<td>2,713,815</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Utilization Rates</th>
<th>Number of in-patient bed-days per year</th>
<th>Number of out-patient visits per year</th>
</tr>
</thead>
<tbody>
<tr>
<td>AIDS stage (WHO stages 3&amp;4)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

In comparison with the cost of treating other diseases, the daily direct costs of HIV/AIDS in-patients were relatively high. This is illustrated in Figure 29, which compares daily direct costs of HIV/AIDS and five other diseases studied in Xanh Pon hospital (Asian Development Bank 2003). The direct costs of treating (excluding ant-retroviral drugs) HIV/AIDS were lower than conditions involving surgery and higher than three other medical conditions. A notable component of HIV/AIDS costs was the diagnostic costs which include mainly blood tests. Diagnostic costs per bed day accounted for 34 percent of total direct costs of HIV/AIDS care and for treatment, whereas for all other conditions diagnostic costs were less than 22 percent and the three non-surgical conditions diagnostic cost was less than 5 percent.

\textsuperscript{75} Sample size: 30 inpatients and 30 outpatients.

\textsuperscript{76} Based on the results of the Hospital Cost Study in Xanh Pon Hospital (Asian Development Bank-Ministry of Health 2003).
The results of the costing of hospital care and treatment of HIV/AIDS in Dong Da District Hospital showed a very large difference between in-patient and out-patient costs. As discussed in the previous section, the costs of drugs and consumables of the in-patient sample reflect the treatment of opportunistic infections only (and no anti-retroviral drugs). To illustrate this difference more clearly, the annualized costs for in-patient and out-patient treatment are presented in Table 26. The annualized cost of out-patients is 6.5 times higher compared to in-patient care – VND2.0 million (US$133) versus VND13.5 million (US$900). This is largely because the cost of in-patient care reflects mainly the cost of treating opportunistic infections and due to the inclusion of anti-retroviral drugs in the out-patient care regimen. It should be noted that the manner in which anti-retroviral drugs were used by out-patients is sporadic and not fully consistent with good clinical practice.

### Table 26: Annualized costs of HIV/AIDS treatment

<table>
<thead>
<tr>
<th>Cost items</th>
<th>In-patient costs per bed-day</th>
<th>Out-patient costs per visit VND</th>
<th>Annualized in-patient costs VND</th>
<th>Annualized out-patient costs VND</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct costs</td>
<td>115,860</td>
<td>2,465,843</td>
<td>1,437,507</td>
<td>12,247,019</td>
</tr>
<tr>
<td>Indirect costs</td>
<td>48,481</td>
<td>247,972</td>
<td>601,510</td>
<td>1,231,595</td>
</tr>
<tr>
<td>Total unit cost</td>
<td>164,341</td>
<td>2,713,815</td>
<td>2,039,016</td>
<td>13,478,614</td>
</tr>
<tr>
<td>Utilization rates (in-patient bed-days and out-patient visits per year)</td>
<td>12.41</td>
<td>4.97</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Interviews with the medical staff of Dong Da District Hospital and Ha Noi Centre for Preventive Medicine indicated that testing for HIV involves three compulsory HIV detection tests and consultation by specialists. In earlier stages of HIV infection, some PLWHAs do CD4 counts in every 6 months for monitoring the disease development. However, the proportion of PLWHAs

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77 Cost Study in Xanh Pon Hospital, ADB-MOH TA3877, 6-2003.
receiving CD4 tests is insignificant compared with the number of PLWHAs in Viet Nam.

Table 27: Direct costs of diagnostic tests

<table>
<thead>
<tr>
<th>Type of test</th>
<th>Labor cost VND</th>
<th>Material cost VND</th>
<th>Direct cost VND</th>
<th>Equipment depreciation (8.4% of direct costs) VND</th>
<th>TOTAL COSTS VND</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quick test</td>
<td>7,975</td>
<td>35,000</td>
<td>42,975</td>
<td>3,610</td>
<td>46,585</td>
</tr>
<tr>
<td>Serodia</td>
<td>7,975</td>
<td>25,000</td>
<td>32,975</td>
<td>2,770</td>
<td>35,745</td>
</tr>
<tr>
<td>Elisa</td>
<td>7,975</td>
<td>25,000</td>
<td>32,975</td>
<td>2,770</td>
<td>35,745</td>
</tr>
<tr>
<td>Consultancy in HIV-positive infections</td>
<td>7,000</td>
<td>7,000</td>
<td>588</td>
<td></td>
<td>7,588</td>
</tr>
<tr>
<td>TOTAL 3 TESTS &amp; CONSULTATION</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>125,663</td>
</tr>
<tr>
<td>CD4 count</td>
<td>7,975</td>
<td>392,500</td>
<td>400,475</td>
<td>33,640</td>
<td>434,115</td>
</tr>
</tbody>
</table>

Costs of HIV/AIDS Treatment and Care

The estimated HIV/AIDS hospital costs in the previous section are the accounting costs of care and treatment currently provided and are strongly influenced by the constrained supply of hospital services and the very limited supply of HIV/AIDS-related care in the country. Furthermore, the patterns of demand for in- and out-patient care are strongly influenced by stigma and discrimination. Interviews with clinical staff at various settings suggest that the level of services provided is far from the level required by the treatment guidelines. Furthermore, the Ministry of Health estimated that only about 10-20 percent of PLWHAs received hospital services (Ministry of Health 2001). This study, therefore, reports the “normative costs” based on Ministry of Health guidelines for care and treatment of PLWHAs with the purpose of estimating more fully the actual HIV/AIDS-related health sector resource requirements.

According to the Ministry of Health general guidelines two anti-retroviral therapy options are used: (1) a combination of two drugs - lamizidivir and crixivan for daily use with vitamin mix and (2) a combination of three drugs - videx, zerit and crixivan also for daily use with vitamin mixture. Option 1 is not clinically indicated by internationally accepted practices and therefore only Option 2 was considered in the analysis. The costed items are listed in – including quarterly blood testing for patients with full-blown AIDS (having CD4 indicator below 500). The annualized total costs are summarized in Table 28.

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78 Annualized costs are calculated by multiplying inpatient costs per bed-day and outpatient costs per visit by the corresponding utilization rate.
Table 28: Normative and accounting costs for treatment of HIV/AIDS

<table>
<thead>
<tr>
<th>Cost items</th>
<th>Estimated costs of anti-retroviral therapy</th>
<th>Annualized inpatient and outpatient costs at current level of services</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Annualized estimated cost VND</td>
<td>Annualized inpatient costs VND</td>
</tr>
<tr>
<td>Drugs &amp; consumables</td>
<td>55,800,000</td>
<td></td>
</tr>
<tr>
<td>Diagnostics</td>
<td>2,593,484</td>
<td></td>
</tr>
<tr>
<td>Clinical staff</td>
<td>84,000</td>
<td></td>
</tr>
<tr>
<td>Total direct costs</td>
<td>58,477,484</td>
<td>1,437,507</td>
</tr>
<tr>
<td>Indirect (overhead) costs</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Depreciation equipment</td>
<td>1,927,899</td>
<td>1,231,595</td>
</tr>
<tr>
<td>Depreciation buildings</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Total indirect costs</td>
<td>1,927,899</td>
<td>601,510</td>
</tr>
<tr>
<td>Total unit cost</td>
<td>60,405,383</td>
<td>2,039,016</td>
</tr>
</tbody>
</table>

To get an estimate of the full costs of HIV/AIDS treatment per patient, the costs of anti-retroviral therapy and the estimated costs of opportunistic infection treatment (derived from the in-patient accounting costs) were added. The results are represented in Table 29. The annualized estimated cost of anti-retroviral therapy is approximately VND60.4 million (US$4,030). These costs are 4.6 times higher than the cost of care and treatment of the current level of care. These cost estimates were used to project the costs of care and treatment for patients with AIDS.

Table 29: Estimates of the annualized costs of AIDS treatment and care

<table>
<thead>
<tr>
<th>Costs estimates</th>
<th>Normative costs of AIDS treatment</th>
<th>Actual costs of AIDS treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Option 1</td>
<td>Option 2</td>
</tr>
<tr>
<td>Direct costs:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Normative anti-retroviral therapy</td>
<td>33,997,484</td>
<td>58,477,484</td>
</tr>
<tr>
<td>Opportunistic infections treatment</td>
<td>1,437,507</td>
<td>1,437,507</td>
</tr>
<tr>
<td>TOTAL DIRECT COSTS</td>
<td>35,434,990</td>
<td>59,914,990</td>
</tr>
<tr>
<td>Indirect costs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Normative anti-retroviral therapy</td>
<td>1,927,899</td>
<td>1,927,899</td>
</tr>
<tr>
<td>Opportunistic infections treatment</td>
<td>601,510</td>
<td>601,510</td>
</tr>
<tr>
<td>TOTAL INDIRECT COSTS</td>
<td>2,529,409</td>
<td>2,529,409</td>
</tr>
<tr>
<td>TOTAL ANNUALISED COSTS</td>
<td>37,964,399</td>
<td>62,444,399</td>
</tr>
</tbody>
</table>

These cost estimates give insight into the in- and out-patient costs of care and treatment of PLWHAs. Because of the unique pattern of utilization revealed in this case study, the in- and out-patient costs could not be used in the estimation of the health sector impact as originally anticipated. However, the expenditure on ARV were used to project the health sector impact of HIV/AIDS in Viet Nam as these departed quite substantially from the cost at which ARVs are becoming available internationally. The projections of the cost of care and treatment used the Resources Needs Model and the
Spectrum model (The Futures Group International 2002). These findings are reported in the main text of the report.

Limitations and Recommendations for Refinement

The case study relied on information from Dong Da hospital. It is not unusual in costing studies to use a single facility as the site for the costing study. However, it is important to assess the extent to which the facility is representative of other facilities. In this study we chose Dong Da hospital because it was designated by the Ministry of Health as the location where people with HIV/AIDS go for treatment. However, it appears that those PLWHAs who seek care at Dong Da hospital are generally more impoverished. The peculiar pattern of in- and out-patient healthcare utilization may have been partly ascribed to the particular community who seek care at Dong Da. Further costing studies will therefore be necessary to validate the findings from this cost analysis.

In the analysis the ratio of the direct to indirect costs from previous costing studies were used, implicitly assuming that cost structures of Dong Da hospital and the other two hospitals are similar. This assumption was explored and it was concluded that there was no reason to believe that the ratio of direct to indirect costs would be substantially different.

A key limitation has been the fact that the level of care currently provided to PLWHA in the hospital studied fall short of the guidelines prescribed by the Ministry of Health. The costing of the current care provided to PLWHAs thus gave a biased indication and under-estimate of the true treatment needs and cost requirements. In this study this short-coming was addressed by complementing the case study findings with international costing evidence.

In the past year there have been substantial advances in the costing of care and treatment for PLWHAs, with particular emphasis on the costing of antiretroviral therapy. The most notable is the development of what is known as the Cape Town model by the University of Cape Town. The application of this model to the Viet Nam situation would be an important complement to the information reported in this study.
**Appendix E: Terms of References**

**Purpose**
To develop an analysis of the social and economic impacts of AIDS in Vietnam to:

- Support advocacy in order to increase understanding and build support for effective HIV/AIDS activities
- Provide information for the development of national HIV/AIDS policies and a National Mutisectoral HIV/AIDS Strategy
- Contribute to the development of tools for monitoring and evaluating the impacts of HIV/AIDS/National AIDS Programme

**Expected Results**
- Analytical report on the assessment of current and possible future social and economic impacts:
  - HIV/AIDS projections; related social & economic impacts
  - Two case studies: household, hospital-level impacts
  - Analysis of challenge to Viet Nam’s development objectives
  - Practical recommendations on response (preventing/ mitigating) possible impacts
Technical Annex I: Impact of Increased Health Expenditure on Consumption Expenditure

The average household spending on healthcare in Viet Nam in 1998 ranged from VND305 thousand (US$20) among the poorest expenditure quintile to VND1,368 thousand (US$90) among the richest quintile (Figure 29).

The data from the Household Impact Case Study suggests that households with PLWHAs experienced increases in health spending of approximately between 12 and 13 times. The case study fund that one of the ways household respond to increased AIDS-related health spending is to reduce expenditure on other forms on consumption, such as food expenditure and education expenditure. It was, however, not possible to quantify the responsiveness of food and education expenditure to increased health spending. The data from the VLSS was used to gain better insight into this issue. This information was used to inform the simulation of the impact of AIDS-related expenditures on household consumption expenditure.

**Aim**

The aim of this analysis was to estimate the impact of additional HIV/AIDS-related health expenditure on consumption expenditure, for example, education expenditure and food expenditure.

**Theoretical Framework and Analytical Strategy**

The impact of increased health spending on education expenditure was assessed by using the VLSS 1998 data to estimate econometrically the determinants of education expenditure and the relationship between household expenditure on healthcare and education (and possible interaction effects). The change in education expenditure for an increase in health expenditure was then predicted.
The following econometric model was estimated:

\[ \text{EDUC\_EXP}_h = \beta_j \text{QUINTILE}_h + \beta_j \text{HH\_SIZE}_h + \beta_j \text{FEMALE\_HEAD}_h + \beta_j \text{EDUC\_HEAD}_h + \beta_j \text{REGION}_h + \beta_j \text{HEALTH\_EXP}_h + \beta_j \text{FOOD\_EXP}_h + \beta_j \text{FUNERAL\_EXP}_h + \beta_j \text{GIFTS}_h + \beta_j \text{HEALTH\_EXP^*(QUINTILE)} + \beta_j \text{HEALTH\_EXP^*\_FOOD\_EXP} + \beta_j \text{FOOD\_EXP^*(QUINTILE)} + \varepsilon_h \]

where \( h \) = household, and \( j \) = coefficient. Note that for this part of the analysis the household is the unit of analysis. \text{EDUC\_EXP} refers to education expenditure per school-age child (Table 30).

Similarly, the impact of additional HIV/AIDS-related health expenditure on food expenditure was estimated (using a similar approach as described in the model above) as well as the determinants of food expenditure and the relationship between household expenditure on healthcare and food (and possible interaction effects) (Table 31). The change in food expenditure for an increase in health expenditure was predicted. The health expenditure and quintile variables were included in the model as interaction terms because poorer households had smaller health expenditures than households in upper expenditure quintiles. This is clearly demonstrated in Table 32.

**Results**

A doubling in per capita health expenditure was associated with a 24.2 percent decrease in education expenditure per school-aged child (Table 32). This elasticity measure did not vary significantly by expenditure quintile. Similarly, if total household health expenditure doubles, i.e., increases by 100 percent relative to the sample mean, this increase was associated with between 10 and 20 percent decrease in food expenditure, depending on the expenditure quintile (Table 33).
Table 30: Regression analysis of determinants of education expenditure

| dep var: educ expenditure per capita | Coef.  | Std. Err. | t     | P>|t| | [95% Conf. Interval] |
|-------------------------------------|--------|-----------|-------|-------|---------------------|
| female headed hh                    | -9.70  | 26.96     | -0.36 | 0.719 | -62.56              |
| hh size                             | 84.56  | 10.32     | 8.19  | 0.000 | 64.32               |
| age of hh head                      | 6.55   | 0.97      | 6.79  | 0.000 | 4.66                |
| education of hh head                | 10.53  | 3.12      | 3.38  | 0.001 | 4.42                |
| Region 2                            | -137.93| 62.42     | -2.21 | 0.027 | -260.30             |
| Region 3                            | -127.56| 58.50     | -2.18 | 0.029 | -242.24             |
| Region 4                            | 56.82  | 63.57     | 0.89  | 0.371 | -67.81              |
| Region 5                            | 81.65  | 61.95     | 1.32  | 0.188 | -39.79              |
| Region 6                            | 99.55  | 64.15     | 1.55  | 0.121 | -26.21              |
| Region 7                            | 107.65 | 68.39     | 1.57  | 0.116 | -26.42              |
| Region 8                            | 64.14  | 79.99     | 0.80  | 0.423 | -92.67              |
| Region 9                            | 231.27 | 68.67     | 3.37  | 0.001 | 96.63               |
| Region 10                           | 135.73 | 62.91     | 2.16  | 0.031 | 12.40               |
| food expenditure                    | -0.05  | 0.00      | -9.93 | 0.000 | -0.06               |
| funeral expenditure                 | 0.00   | 0.01      | -0.23 | 0.821 | -0.02               |
| non-health expenditure per capita   | 0.16   | 0.02      | 10.71 | 0.000 | 0.13                |
| non-food expenditure                | -0.18  | 0.01      | -23.57| 0.000 | -0.19               |
| electricity expenditure             | -0.27  | 0.03      | -9.68 | 0.000 | -0.33               |
| rent expenditure                    | 0.53   | 0.02      | 22.23 | 0.000 | 0.48                |
| Q2                                  | 100.93 | 46.53     | 2.17  | 0.030 | 9.71                |
| Q3                                  | 181.80 | 47.38     | 3.84  | 0.000 | 88.91               |
| Q4                                  | 349.05 | 50.68     | 6.89  | 0.000 | 249.70              |
| Q5                                  | 702.70 | 60.67     | 11.57 | 0.000 | 583.60              |
| health expenditure per capita       | -0.59  | 0.42      | -1.40 | 0.162 | -1.14               |
| Q2*health expenditure per capita    | -0.11  | 0.48      | -0.23 | 0.819 | -1.05               |
| Q3*health expenditure per capita    | -0.07  | 0.45      | -0.15 | 0.882 | -0.94               |
| Q4*health expenditure per capita    | -0.13  | 0.43      | -0.30 | 0.766 | -0.98               |
| Q5*health expenditure per capita    | 0.14   | 0.42      | 0.34  | 0.734 | -0.68               |
| constant                            | -707.59| 96.25     | -7.35 | 0.000 | -896.28             |

Number of obs | = 4856
F( 28,  4827) | = 141.29
Prob > F | = 0
R-squared | = 0.4504
Adj R-squared | = 0.4472
Root MSE | = 725.36
Table 31: Regression analysis of determinants of food expenditure

|                  | Coef. | Std. Err. | t     | P>|t|   | [95% Conf. Interval] |
|------------------|-------|-----------|-------|-------|----------------------|
| female headed hh | -150.68 | 80.65     | -1.87 | 0.062 | -308.79              |
| hh size          | 1377.50 | 23.97     | 57.48 | 0.000 | 1330.51              |
| age of hh head   | -1.99  | 2.90      | -0.69 | 0.493 | -7.68                |
| education of hh head | -47.16 | 9.31      | -5.07 | 0.000 | -65.40               |
| Region 2         | -694.48 | 186.59    | -3.72 | 0.000 | -1060.29             |
| Region 3         | -1201.28 | 174.26    | -6.89 | 0.000 | -1542.91             |
| Region 4         | -917.49 | 189.76    | -4.84 | 0.000 | -1289.50             |
| Region 5         | -1070.90 | 184.75    | -5.80 | 0.000 | -1433.09             |
| Region 6         | -1222.07 | 191.17    | -6.39 | 0.000 | -1596.86             |
| Region 7         | -1438.64 | 203.61    | -7.07 | 0.000 | -1837.83             |
| Region 8         | -1392.53 | 238.51    | -5.84 | 0.000 | -1860.13             |
| Region 9         | -538.10  | 205.58    | -2.62 | 0.000 | -941.13              |
| Region 10        | -1379.31 | 187.28    | -7.37 | 0.000 | -1746.46             |
| education expenditure per child | -0.42 | 0.04      | -9.93 | 0.000 | -0.51                |
| funeral expenditure | 0.16 | 0.03      | 5.56  | 0.000 | 0.10                 |
| non-health expenditure per capita | 1.47 | 0.04      | 36.12 | 0.000 | 1.39                 |
| non-food expenditure | -0.04 | 0.02      | -1.71 | 0.087 | -0.09                |
| electricity expenditure | -0.03 | 0.08 | -0.36 | 0.718 | -0.20               |
| rent expenditure | -0.38 | 0.07 | -5.09 | 0.000 | -0.53                |
| Q2               | 1432.94 | 137.76    | 10.40 | 0.000 | 1162.87              |
| Q3               | 1913.27 | 139.29    | 13.74 | 0.000 | 1640.19              |
| Q4               | 2477.43 | 148.15    | 16.72 | 0.000 | 2186.99              |
| Q5               | 2911.27 | 179.45    | 16.22 | 0.000 | 2559.47              |
| health expenditure per capita | -0.89 | 1.26 | -0.71 | 0.477 | -3.36               |
| Q2*health expenditure per capita | -2.34 | 1.44 | -1.63 | 0.104 | -5.17               |
| Q3*health expenditure per capita | -0.43 | 1.34 | -0.32 | 0.749 | -3.05               |
| Q4*health expenditure per capita | 0.05 | 0.29 | 0.04 | 0.966 | -2.48               |
| Q5*health expenditure per capita | 0.76 | 1.26 | 0.60 | 0.547 | -1.71               |
| constant         | -3347.52 | 285.56    | -11.72 | 0.000 | -3907.35             |

Number of obs = 4856
F( 28,  4827) = 482.78
Prob > F = 0
R-squared = 0.7369
Adj R-squared = 0.7353
Root MSE = 2170.4
The difference in elasticity by expenditure quintile was statistically significant, with the largest sensitivity among the poorest quintiles. For example, a 100 percent increase in health spending was associated with a 19.4 percent decrease in food expenditure for the poorest quintile, compared to a decrease of 12.0 percent for the richest quintile. Similarly, a doubling in per capita health expenditure was associated with a 25.2 percent decrease in education expenditure per school-going child. This elasticity measure did not vary significantly by expenditure quintile.

Table 32: Responsiveness of education expenditure to health spending

<table>
<thead>
<tr>
<th>Change in Health expenditure</th>
<th>Change in Education Expenditure</th>
</tr>
</thead>
<tbody>
<tr>
<td>100%</td>
<td>-24.2%</td>
</tr>
</tbody>
</table>

Own calculation using VLSS 1998 data.

Table 33: Responsiveness of food expenditure to health spending

<table>
<thead>
<tr>
<th>Change in Health expenditure</th>
<th>Change in Food Expenditure</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Q1</td>
</tr>
<tr>
<td>100%</td>
<td>-19.4%</td>
</tr>
</tbody>
</table>

Own calculation using VLSS 1998 data.

The results from the Household Impact Case Study suggest that households with PLWHAs experienced increases in health spending of approximately 1,200 percent. The elasticities identified in the econometric analysis was not applied to an increase of 1,200 percent in health spending because, by definition, the elasticity measures assume a marginal increase, and the increases of the magnitude observed in the case study by far exceeds a marginal increase. Therefore these results should be interpreted with caution and viewed merely as illustrative of the fact that even if HIV/AIDS-related health spending increased by a small fraction, non-trivial decreases in food and education expenditures in the household follow. Furthermore, the results suggest that food expenditure is more responsive to increased health spending than education expenditures, and lastly, that the responsiveness of food spending is much greater among poorer households.

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79 As a percentage of the sample mean.
Technical Annex II: Impact of AIDS on Consumption Expenditure and Poverty

Aim

The aim of this part of the analysis was to model the impact of HIV/AIDS-related income and expenditure effects on the consumption expenditure of households with PLWHAs, and to project the aggregate impact of HIV/AIDS on poverty in Viet Nam between 2004 and 2015.

Theoretical Framework and Analytical Strategy

The empirical information from the case study and existing household surveys from other countries (NIS/MOH/ORC/Macro in Knowles 2003: 22; Palanigounder et al. 2003; Pitayanon et al. 1994; Kongsin 2000) have been used to inform the magnitude of the AIDS-related health expenditures that were used in the modeling. Not all health spending is additional to the household’s consumption requirements, because it is well known that households use various coping mechanisms to reduce the impact of the additional HIV/AIDS-related health spending on the household. Given the data available, it was impossible to empirically estimate by what proportion coping mechanisms mitigate the impact of the additional health spending. The literature also indicates that the degree of impact mitigation varies by income (Lundberg et al. 2000). Lower income households are less likely to reallocate expenditure to lower cost expenditure items, whereas higher income households are more likely to switch to cheaper consumption alternatives or draw from savings or support from relatives and friends. In the absence of additional empirical data, the analysis assumed that none of the impact of the expenditure and income effects is mitigated among the poorest two quintiles and 10 percent of the impact is mitigated in the upper three quintiles. This is an area for future refinement to be informed by surveys (based on a probability sample) of households with PLWHAs.

The basic setup of the analytic strategy is as follows: The analysis was started by dividing the total number of households into quintiles. Using the household size by consumption quintile, the number of individuals per expenditure quintile was calculated. It was assumed that households have only one PLWHA, i.e., the number of households with a PLWHA is equal to the number of PLWHAs, and the number of people affected is the household size in each quintile multiplied by the number of PLWHAs in that quintile. This assumption was motivated by the relatively early stage of the epidemic in Viet Nam and because of the predominant modes of transmission: IDU and to a lesser extent commercial sex. Heterosexual transmission within the household which will result in the clustering of HIV infections in a single household is less likely (compared to Africa with a heterosexual epidemic).
Another element of the basic setup was to divide the households with a PLWHA into consumption (or income) quintiles. There is a paucity of data on the income distribution of PLWHAs. No household surveys with probability samples in the region were found that tested for HIV. Also, income data is not collected in surveillance programs. For this reason the socio-economic distribution of PLWHA was inferred from behavioral information derived from DHS+ data for Viet Nam (Bloom et al. 2002).

Essentially there were three stages in the analysis. The first stage of the analysis estimated the magnitude of the expenditure effect. The second estimated the magnitude of the income effect. The third stage estimated the impact of the expenditure and income effects on household consumption expenditure. This was used to identify the number of people who fall below the poverty line and deeper into poverty due to the HIV/AIDS-related expenditure and income effects.

**Expenditure Effect**

Three categories of people with HIV/AIDS relevant to this analysis were identified. The three categories (c) are:

- \( c = 1 \): People with HIV infection who are symptomatic but not yet full blown AIDS, hereafter called, symptomatic, non-AIDS person with HIV. These individuals experience a small increase in healthcare utilization. It was assumed that the per capita health expenditure by a PLWHA in this category increases by 100 percent above the per capita health expenditure in a particular quintile. This was motivated by the fact that household survey data suggest that the average health expenditure by person who has been hospitalized is just over two times the average per capita health spending. This is also consistent with the annual average cost of palliative care used in the GOALS model (The Futures Group International, 2003).

- \( c = 2 \): People with AIDS who are not using ARVs. It was assumed that the per capita health expenditure by a PLWHA in this category increases by 500 percent above the per capita health expenditure in a particular quintile. This is roughly equal to the cost of 6 out-patient visits and a week of in-patient care with the level of cost sharing as is appropriate for each country used in the GOALS model (The Futures Group International, 2003).

- \( c = 3 \): People with AIDS who are using ARVs. It was assumed that the per capita health expenditure by a PLWHA in this category increases by 1,000 percent above the per capita health expenditure in a particular quintile. This is motivated by information from the Household Impact Case Study and the finding that patients on ARVs spent double the amount that those who did not use ARVs (Palanigounder et al. 2003).

It was also assumed that people with AIDS survive for two years if not on ART and that people with AIDS who are on ART survive for an additional 2.5, i.e., a
total of 4.5 years\textsuperscript{80}. Furthermore, it was assumed that only 5 percent of people with AIDS were on ART\textsuperscript{81}.

To make the analysis tractable, only the impact of HIV/AIDS-related increased health expenditure was considered in the estimation of the expenditure effect. Let $HE_{cq}^\text{AIDS}$ be the annual health expenditure by a PLWHA in category c, quintile, q, and $HE_{q}^\text{pc}$ be the annual per capita health expenditure by other household members. Let $HE_{cq}^{\text{hh-AIDS}}$ denote total health expenditure in a household with a PLWHA, and let $HE_{cq}^{\text{pc-AIDS}}$ denote the per capita health expenditure in a household with a PLWHA. A factor, $a_c$, was identified which represents the proportion by which the health expenditure by PLWHAs in the three categories increase. This proportion does not vary by quintile and varies for the three categories.

Let $m$ be the proportion of increased health spending by the PLWHA that is mitigated\textsuperscript{82}. $m$ is assumed to vary across quintiles. Specifically, $m$ was assumed to be zero for the first two quintiles and 10 percent in the other quintiles.

Health expenditure by the PLWHA is given by: $HE_{cq}^\text{AIDS} = a_c \times HE_{q}^\text{pc}$. Health expenditure by the PLWHA after impact mitigation is: $(a_c \times HE_{q}^\text{pc}) \times (1 - m)$.

Household health expenditure in a household with a PLWHA is:

$$HE_{cq}^{\text{hh-AIDS}} = \left(\left(HHSIZE_q - 1\right) \times HE_{q}^\text{pc}\right) + HE_{cq}^\text{AIDS}$$

$$= \left(\left(HHSIZE_q - 1\right) \times HE_{q}^\text{pc}\right) + \left(a_c \times HE_{q}^\text{pc}\right) \times (1 - m)$$

$$= HE_{q}^\text{hh} - HE_{q}^\text{pc} + a_c \times HE_{q}^\text{pc} - a_c \times m \times HE_{q}^\text{pc}$$

In this construction it is assumed that per capita health expenditure by other household members remain the same. But, empirical evidence from household surveys suggests that health spending by other household members is lower. This evidence is captured in the factor $m$, because one of the ways of mitigating the impact of increased health spending is to decrease healthcare consumption by other household members. In order to avoid double counting, the health expenditure by non-PLWHA household members is kept the same.

Due to the paucity of information on HIV/AIDS-related health spending across various expenditure quintiles, a high and a low estimate of the HIV/AIDS-related health expenditure was derived. The lower bound estimate is described first.

\textsuperscript{80} This assumption was informed by a personal communication with Swarup Sarkar, UNAIDS-SEAPICT.

\textsuperscript{81} Various scenarios of different proportions were also done, for example, 50 percent and 80 percent respectively (as per the targets set by WHO).

\textsuperscript{82} This is also the proportion by which reduced income referred to in Income Effect is reduced.
Expenditure effect for category 1 with symptomatic, non-AIDS person with HIV:

<table>
<thead>
<tr>
<th></th>
<th>Q1</th>
<th>Q2</th>
<th>Q3</th>
<th>Q4</th>
<th>Q5</th>
</tr>
</thead>
<tbody>
<tr>
<td>$HE_{1q}^{bh-AIDS}$</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>$HE_{1q}^{pc-AIDS}$</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Expenditure effect for category 2 with person with AIDS not using ARVs:

<table>
<thead>
<tr>
<th></th>
<th>Q1</th>
<th>Q2</th>
<th>Q3</th>
<th>Q4</th>
<th>Q5</th>
</tr>
</thead>
<tbody>
<tr>
<td>$HE_{2q}^{bh-AIDS}$</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>$HE_{2q}^{pc-AIDS}$</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Expenditure effect for category 3 with person with AIDS using ARVs:

<table>
<thead>
<tr>
<th></th>
<th>Q1</th>
<th>Q2</th>
<th>Q3</th>
<th>Q4</th>
<th>Q5</th>
</tr>
</thead>
<tbody>
<tr>
<td>$HE_{3q}^{bh-AIDS}$</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>$HE_{3q}^{pc-AIDS}$</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The upper bound estimate was informed by the information available from the Household Impact Case Study and existing household surveys or case studies of households with a PLWHA, for example: Viravaidya et al. (1992) and Palanigounder et al. (2003).

**Income Effect**

In Viet Nam there is a greater likelihood that the PLWHA was not a productive household member before HIV infection because of the high proportion of IDUs among the total numbers of PLWHAs. It is assumed that only a third of PLWHAs are employed. This is supported by epidemiological studies in Viet Nam (Hien 1999; Tung 2001) and by the Household Impact Case Study.

Let $w_q$ denote average wage of working household members in quintile, q. The number of working household members is given by whsize. Let $I_q$ denote the total household income, where $I_q = w_q \cdot \text{whsize} + NWI_q$, and $NW\text{I}_q$ denotes non-wage sources of income. Let $w_{cq}^{AIDS}$ denote the wage of the PLWHAs prior to illness and $I_{cq}^{bh-AIDS}$ represent the household wage and non-wage income after the income effect, i.e., the loss of income due the illness of the PLWA. As before, $m$ is the proportion of increased health spending by the PLWHA that is mitigated.

For parsimony, the lost household income due to time spent by caregivers is not included here, and consequently the income effect is likely a conservative estimate of the true income effect. The income effect is likely different when the PLWHA uses ARVs or not. For this reason the magnitude of the income effect is moderated by the probability ($r$) that the person will not be
economically active. In the modeling it was assumed that \( r = 100 \) percent if the PLWHA does not use ARVs and 80 percent if the person is using ARVs. The income effect is only applied to PLWHAs with AIDS (i.e., categories 2 and 3) because it is assumed that people who are HIV positive and symptomatic, but not full blown AIDS do not experience a decrease in working capacity. Therefore, if \( c = 1 \), \( r = 0 \), if \( c = 2 \), \( r = 1 \) and if \( c = 3 \), \( r = 0.8 \).

Household consumption expenditure after income effect:

\[
CE_{cq}^{hh-IE} = I_{q}^{hh-IE} = I_{q} - w_{q}^{AIDS} = [WHSIZE \ast w_{q} + NWI_{q}] - w_{cq}^{AIDS} \ast (1 - m)
\]

Per capita consumption expenditure after income effect:

\[
C_{cq}^{pc-IE} = CE_{cq}^{hh-IE} / HHSIZE_{q} = [WHSIZE \ast w_{q} + NWI_{q} - w_{cq}^{AIDS} \ast (1 - m)] / HHSIZE_{q}
\]

**Impact on Consumption Expenditure**

Let \( CE_{cq}^{AIDS} \) be the annual consumption expenditure by a PLWHA in category \( c \), quintile, \( q \), and \( CE_{q}^{pc} \) be the annual consumption expenditure by other household members. Let \( CE_{cq}^{hh-AIDS} \) denote total consumption expenditure in a household with a PLWHA, and let \( CE_{cq}^{pc-AIDS} \) denote the per capita consumption expenditure in a household with a PLWHA.

The combined impact of the expenditure and income effects on annual household consumption expenditure is given by:

\[
CE_{cq}^{hh-AIDS} = CE_{q}^{hh-IE} - HE_{cq}^{pc} + HE_{cq}^{AIDS}
\]

\[
= [WHSIZE \ast w_{q} + NWI_{q} - w_{cq}^{AIDS}] - HE_{q}^{pc} + (a_{c} \ast HE_{q}^{pc})
\]

The combined impact of the expenditure and income effects on annual per capita consumption expenditure is given by:

\[
CE_{cq}^{pc-AIDS} = [WHSIZE \ast w_{q} + NWI_{q} - w_{cq}^{AIDS} - HE_{q}^{pc} + (a_{c} \ast HE_{q}^{pc})] / HHSIZE_{q}
\]

If \( CE_{q}^{pc} > PL \) and \( CE_{q}^{pc-AIDS} < PL \) then the household with the PLWHA will fall into poverty, i.e., newly poor. If \( CE_{q}^{pc} < PL \) and \( CE_{q}^{pc-AIDS} < PL \) then the household with the PLWHA will fall deeper into poverty. This is used to determine the impact of the income and expenditure effects on poverty.
Impact on Poverty

The impact on poverty headcount for 2004 and 2015 was estimated based on projections for 2004 and 2015 obtained from UNAIDS. This end date was chosen because of the MDG targets have been set according to 2015.

No information is available on the socio-economic status of households of PLWHAs. For this reason the socio-economic distribution of PLWHA was inferred from behavioral information by quintile derived from DHS+ data for Viet Nam (Bloom et al. 2002). Based on this data, the number of households with a person with AIDS: 

\[ AIDS_q = p(AIDS) \]

where \( pq \) is the proportion of total HIV/AIDS cases in quintile \( q \). Based on Bloom et al (2002) the inferred values of \( pq \) are: \( p1=29\% \); \( p1=25\% \); \( p1=20\% \); \( p1=17\% \) and \( p1=9\% \).

Let \( v \) denote the proportion of HIV infected people who are experiencing elevated health expenditures.

\[ HIV_q = v(HIV) \]

Number of already poor people = \( PHR \times POP \) where \( PHR \) = poverty headcount ratio.

Number of newly poor people:

\[ HIV / AIDS_{hh} = \sum_{q=5}^{q=5} (HIV / AIDS_q \times HHSIZE_q) = \sum_{q=5}^{q=5} \left[ \left( p(AIDS) + v(HIV) \times HHSIZE_q \right) \right] \]

if \( CE^{pc}_q > PL \) and \( CE^{pc-AIDS}_q < PL \).

Number of poor people who fall deeper into poverty:

\[ HIV / AIDS_{hh} = \sum_{q=3}^{q=5} (HIV / AIDS_q \times HHSIZE_q) = \sum_{q=3}^{q=5} \left[ \left( p(AIDS) + v(HIV) \times HHSIZE_q \right) \right] \]

if \( q=4 \) or \( 5 \), if \( CE^{pc}_q < PL \) and \( CE^{pc-AIDS}_q < PL \).

Results

The findings of the simulation are reported in the main text of the report. Additional results from Household Impact Assessment that are referred the main text are showed in Figure 31 and Figure 32.

Assessment of the Assumptions and Limitations

In Box 3 the question was asked: How reasonable are these assumptions? The discussion in that box looks specifically at the assumptions and some of the efforts to validate various aspects of the analysis.
Given the deterministic nature of the simulations used here, the analysis will be substantially enhanced by applying the theoretical framework to household survey data. This was a key limitation, related largely to the absence of household data from PLWHA households based on a probability sample.

Another limitation related to the inability to use household survey data is the fact that only one poverty indicator, the poverty headcount ratio, was considered in the analysis. As mentioned previously in the text of the report, the poverty headcount ratio, underestimates the true impact of HIV/AIDS on poverty because it is only influenced by newly poor people. Another poverty indicator, the poverty gap, is more data intensive than the current analysis allows for.

As stated in the description of the methodology numerous assumptions have had to be made. Some were because of a lack of information and other assumptions were in order to make the analysis tractable. Hence the findings reported in this document should be considered to be a first cut at quantifying the impact of HIV/AIDS on poverty in Viet Nam.
Figure 31: Upper and lower bound estimates of the impact of HIV/AIDS on consumption expenditure (% change)

Households with a PLWHA (upper bound estimate):
Change in Consumption Expenditure with and without ARVs

Households with a PLWHA (lower bound estimate):
Change in Consumption Expenditure with and without ARVs
Figure 32: Upper and lower bound estimates of the consumption expenditure after impact of HIV/AIDS (US$)

Households with a PLWHA (upper bound estimate):
Impact of AIDS on Consumption Expenditure relative to the Poverty Lines

Households with a PLWHA (lower bound estimate):
Impact of AIDS on Consumption Expenditure relative to the Poverty Lines
Bibliography


26. Kongsin:


