Looking down the barrel of a cannon: the potential economic costs of HIV/AIDS in Papua New Guinea

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SUMMARY

The HIV/AIDS (human immunodeficiency virus/acquired immune deficiency syndrome) epidemiological model for southern Africa appears to fit data available for the Papua New Guinea (PNG) experience to date. Using certain aspects of the southern African experience, we can create some scenarios for the potential economic costs of HIV/AIDS in PNG. The first part of this paper surveys relevant literature that reports the economic impact of HIV/AIDS in southern Africa, primarily in terms of the microeconomic (health system) and macroeconomic (economy-wide) costs. The second part of the paper presents alternative scenarios for PNG at the micro- and macro-levels, both of which are grounded on the southern African experience.

Introduction

More than 24 million people around the world have now died of AIDS (acquired immune deficiency syndrome); 3.1 million died in 2002 alone (1). The incidence and prevalence of HIV (human immunodeficiency virus) infection is moving eastward with 7.2 million people in Asia and the Pacific living with HIV/AIDS out of a total of 42 million globally (1). Papua New Guinea (PNG) is the fourth country in the Asia-Pacific Region to be classified as having a ‘generalized’ HIV epidemic (2). UNAIDS/WHO (Joint United Nations Programme on HIV/AIDS and the World Health Organization) (3) define a generalized HIV epidemic as occurring when “HIV is firmly established in the general population. Although sub-populations may contribute disproportionately to the spread of HIV, sexual networking in the general population is sufficient to sustain an epidemic independent of high-risk groups. HIV prevalence is consistently over 1 percent in pregnant women.”

The high prevalence of many sexually transmitted infections (STIs) in PNG highlights the potential vulnerability of the population to HIV. Available evidence suggests that PNG is experiencing a sub-Saharan African social-epidemiological pattern for HIV infection (2). The sub-Saharan pattern has been characterized (4) as having the following features: heterosexual sexual transmission as the main mode of HIV transmission; more women than men becoming infected; young women having high infection rates because they have sex with older men; people dying 8-10 years after initial HIV infection; and tuberculosis becoming the most common AIDS-related illness (Table 1) (1).

The southern African experience shows that the HIV/AIDS epidemic has had a major socioeconomic impact particularly in high-prevalence countries. Economic growth has been reduced by 1-2% per annum in the highest-prevalence countries. In Botswana, for example, where the adult HIV antibody prevalence rate is nearly 40%, the household

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<table>
<thead>
<tr>
<th>Region</th>
<th>Epidemic started</th>
<th>Adults and children living with HIV/AIDS</th>
<th>Adults and children newly infected with HIV</th>
<th>Adult prevalence rate* %</th>
<th>% of HIV-positive adults who are women</th>
<th>Main mode(s) of transmission for adults living with HIV/AIDS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sub-Saharan Africa</td>
<td>late 1970s/ early 1980s</td>
<td>29.4 million</td>
<td>3.5 million</td>
<td>8.8</td>
<td>58</td>
<td>Hetero</td>
</tr>
<tr>
<td>North Africa and Middle East</td>
<td>late 1980s</td>
<td>550 000</td>
<td>83 000</td>
<td>0.3</td>
<td>55</td>
<td>Hetero, IDU</td>
</tr>
<tr>
<td>South and South-East Asia</td>
<td>late 1980s</td>
<td>6.0 million</td>
<td>700 000</td>
<td>0.6</td>
<td>36</td>
<td>Hetero, IDU</td>
</tr>
<tr>
<td>East Asia and Pacific</td>
<td>late 1980s</td>
<td>1.2 million</td>
<td>270 000</td>
<td>0.1</td>
<td>24</td>
<td>IDU, hetero, MSM</td>
</tr>
<tr>
<td>Latin America</td>
<td>late 1970s/ early 1980s</td>
<td>1.5 million</td>
<td>150 000</td>
<td>0.6</td>
<td>30</td>
<td>MSM, IDU, hetero</td>
</tr>
<tr>
<td>Caribbean</td>
<td>late 1970s/ early 1980s</td>
<td>440 000</td>
<td>60 000</td>
<td>2.4</td>
<td>50</td>
<td>Hetero, MSM</td>
</tr>
<tr>
<td>Eastern Europe and Central Asia</td>
<td>early 1990s</td>
<td>1.2 million</td>
<td>250 000</td>
<td>0.6</td>
<td>27</td>
<td>IDU</td>
</tr>
<tr>
<td>Western Europe</td>
<td>late 1970s/ early 1980s</td>
<td>570 000</td>
<td>30 000</td>
<td>0.3</td>
<td>25</td>
<td>MSM, IDU</td>
</tr>
<tr>
<td>North America</td>
<td>late 1970s/ early 1980s</td>
<td>980 000</td>
<td>45 000</td>
<td>0.6</td>
<td>20</td>
<td>MSM, IDU, hetero</td>
</tr>
<tr>
<td>Australia and New Zealand</td>
<td>late 1970s/ early 1980s</td>
<td>15 000</td>
<td>500</td>
<td>0.1</td>
<td>7</td>
<td>MSM</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td>42 million</td>
<td>5 million</td>
<td>1.2</td>
<td>50</td>
<td></td>
</tr>
</tbody>
</table>

*The proportion of adults (15 to 49 years of age) living with HIV/AIDS in 2002, using 2002 population numbers
Hetero—heterosexual transmission
IDU—transmission through injecting drug use
MSM—sexual transmission among men who have sex with men

Table based on Table in UNAIDS/WHO, AIDS Epidemic Update, December 2002 (1.6)
income forecast shows a 13% reduction over the next ten years for the poorest quarter of households; at this rate, the government will lose 20% of public revenue by 2010 due to the epidemic (5). PNG’s economic experience during the next 10 years may also be substantially affected by HIV/AIDS at both the macro- and micro- levels.

This paper draws from the literature that reports upon the economic impact of the HIV/AIDS epidemic in southern Africa. It then presents a best-case and worst-case scenario for PNG. A better understanding of the economic effects of the epidemic can assist the development of effective responses. Additional study is required to understand better the economic effects of intervention policies in the PNG context.

**Methods**

Medline and PubMed were searched to identify relevant studies regarding this topic. An initial search was conducted by limiting the time period from 1990 to the present and by using the search strings ‘cost of HIV/AIDS’, ‘cost-effectiveness and HIV/AIDS’, and ‘cost of care for HIV/AIDS’. Each search turned up over 100 references. The references were then reviewed for relevance. For the references that were identified as being most relevant, the ‘related articles’ search option was chosen on Medline. Those reference lists were reviewed and the relevant references compared against the list of previously selected references. A final list of 170 references was compiled for further review. The most common key words were: ‘cost’, ‘cost-effectiveness’, ‘evidence base’, ‘HIV/AIDS’ and ‘prevention’.  

Selection criteria for article retrieval were developed and included: date, whether or not it was a review article, whether or not ‘cost’ or ‘cost-effectiveness’ was in the title, and whether or not sub-Saharan Africa or Papua New Guinea was focused upon geographically. 30 articles were initially identified for retrieval and review. A secondary search of the bibliographies of the selected articles was undertaken and another 20 articles were selected for retrieval. In addition to the references cited in this paper, the following journals contained useful background information: AIDS Annual Africa, AIDS Policy and Law, American Journal of Public Health, Bulletin of the World Health Organization, Harvard AIDS Review, Health Services Journal, International Journal of STD and AIDS, New England Journal of Medicine, Sexually Transmitted Infections and South African Medical Journal. Internet websites representing such important organizations as UNAIDS, WHO, UNDP (United Nations Development Programme), World Bank and AusAID (Australian Agency for International Development) were also consulted. Several recent reviews of the macroeconomic effects (5,6) of the HIV epidemic, and the cost-effectiveness (7, 8) of intervention strategies were located. Additional literature examined the effect of the epidemic on key sectors of the economy such as health (9-11), education (12) and agriculture (13).

**Results**

**Macroeconomic effects**

Two recent articles have reviewed the macroeconomic effects of the HIV pandemic in southern Africa. Dixon et al. (6) reviewed 11 macroeconomic studies (14-25) that reported on gross domestic product (GDP) per capita as an economic endpoint (Table 2). The studies used regression models. Regression models relate GDP per capita (a dependent variable) to a number of explanatory (independent) variables that affect GDP per capita. Some of the explanatory variables are of particular interest (i.e., prevalence of HIV) and some are used to control for relationships known to affect the dependent variable (e.g., nutrition levels). The relationships are analyzed statistically. The most recent studies showed that national growth rates (growth of GDP per capita) were reduced by 2.4% per year across southern Africa due to HIV/AIDS.
### TABLE 2

**SUMMARY OF STUDIES OF THE MACROECONOMIC IMPACT OF HIV/AIDS IN AFRICA**

<table>
<thead>
<tr>
<th>Study</th>
<th>Countries</th>
<th>Period of most recently used HIV/AIDS data</th>
<th>Results (comparison with non-HIV/AIDS scenario)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dixon et al. (2001) (14)</td>
<td>41 countries (1960-1998)</td>
<td>Late 1990s</td>
<td>Growth rates reduced by 2-4%; large variation across countries in line with prevalence of HIV</td>
</tr>
<tr>
<td>World Bank (2001) (15)</td>
<td>Swaziland</td>
<td>Early 1990s</td>
<td>Average rate of growth of GDP in 1991-2015 will be 1.5% lower a year</td>
</tr>
<tr>
<td>World Bank (2001) (16)</td>
<td>Namibia</td>
<td>Early 1990s</td>
<td>Average rate of growth of GDP in 1991-2015 will be 1.1% lower a year</td>
</tr>
<tr>
<td>World Bank (2000) (17)</td>
<td>Lesotho</td>
<td>Late 1980s</td>
<td>Average rate of growth of GDP in 1986-2015 will be 0.8% lower a year</td>
</tr>
<tr>
<td>Bonnel (2000) (18)</td>
<td>About 50 countries (1990-1997)</td>
<td>Mid-1990s</td>
<td>Rate of growth of GDP per capita reduced by 0.7% a year in the 1990s</td>
</tr>
<tr>
<td>Quattlek and Fourie (2000) (19)</td>
<td>South Africa</td>
<td>Mid-1990s</td>
<td>Average rate of GDP growth over next 15 years will be 0.3-0.4% lower a year</td>
</tr>
<tr>
<td>BIDPA (2000) (20)</td>
<td>Botswana</td>
<td>Late 1990s</td>
<td>Average rate of growth of GDP in 2000-2010 reduced by 1.5% a year</td>
</tr>
<tr>
<td>Cuddington and Hancock (1994) (22)</td>
<td>Malawi</td>
<td>Early 1990s</td>
<td>Average rate of growth of GDP in 1985-2010 reduced by up to 0.3%</td>
</tr>
<tr>
<td>Cuddington (1993) (23,24)</td>
<td>Tanzania</td>
<td>Early 1990s</td>
<td>Per capita GDP in 1985-2010 up to 10% smaller</td>
</tr>
<tr>
<td>Over (1992) (25)</td>
<td>30 sub-Saharan countries</td>
<td>Early 1990s</td>
<td>Rate of growth of GDP per capita in 1990-2025 reduced by 0.15% (0.6% in 10 worst-affected countries)</td>
</tr>
</tbody>
</table>

GDP=gross domestic product  
BIDPA=Botswana Institute for Development Policy Analysis

Table based on Table 2 of Dixon et al. (6)
A second class of models, computable general equilibrium models (CGE), was used in two other studies (26,27) included in the Dixon et al. review (14). Computable general equilibrium models consist of a system of interdependent equations that describe the operation of an economy. The equations are developed for broad sectors of the economy (eg, the household sector, the government sector, the production sector, the finance sector and the external sector) and the models contain a detailed treatment of labour markets. CGE models can take account of the different sectorial effects that are caused by HIV/AIDS.

Dixon et al. (14) reported that CGE studies predicted a greater economic impact than the regression-based studies and that there was significant variation across sectors. The South African study (27) compared projected 2010 GDP per capita with and without the presence of HIV/AIDS (0% and 20% adult HIV antibody prevalence) and estimated that the pandemic would reduce GDP per capita by 8%. The Cameroon study (26) concluded that economic growth in that country would be reduced by 50% due to changes in the skill mix of the labour force resulting from AIDS deaths. Significant long-term economic growth reductions are a consequence for countries that have a high prevalence of HIV/AIDS (Table 2) (6).

Whiteside (5) also reviewed the literature on the macroeconomic effects of HIV/AIDS. He reported that the lower population life expectancy that results from AIDS reduces GDP growth by 1.3%. Regression models constructed for Botswana (20), a relatively well-off southern African country that has the highest adult HIV antibody prevalence rate (~ 40%), concluded that over a span of 25 years the epidemic will reduce the size of the economy by 24-38% compared to a baseline estimate constructed in the absence of AIDS.

Whiteside laments that little work has been done to estimate how HIV will affect government budgets in high-prevalence countries. The regression models referred to above that were constructed for Botswana project that by 2010 government revenue will decrease by 9.6%. During that same period, expenditure on employment, health and poverty alleviation will need to increase by 7-18%. The cost of anti-retroviral therapy for all HIV-infected persons was projected to be 17% of Botswana’s GDP and would consume 56% of the recurrent government budget. Whiteside concludes that the economic impact is only a part of the picture because the human costs of grief, pain and suffering are excluded from the analyses.

Microeconomic effects

Health sector

The health sector bears a major responsibility for the prevention, treatment and care of persons infected with HIV. Thus the sector will be severely affected as prevalence rates increase. Floyd et al. (10) conducted a retrospective analysis of the years 1991 to 1998 for a general hospital in the Hlabisa District of South Africa. During that time period the HIV antibody seroprevalence rate for antenatal clinic patients increased from 4% (1992) to 29% (1998). They reported that between 1991 and 1998 total admissions increased by 81% and adult tuberculosis admissions increased by 360%. In 1997, non-tuberculosis clinical AIDS patients accounted for 4% of adult medical admissions while they accounted for only 0.2% in 1991; the actual number of patients increased by 43-fold. Floyd et al. concluded that tuberculosis and non-tuberculosis clinical AIDS patients were the only categories of admissions that showed a clear upward trend due to the increasing HIV/AIDS epidemic (Figure 1) (10).

Guinness et al. (9) retrospectively examined the cost of hospital care for HIV-antibody-positive and HIV-antibody-negative patients admitted to a medical ward at Kenyatta National Hospital in Nairobi, Kenya during a 14-week period in 1997. At that time the adult HIV antibody prevalence rate was approximately 10% and the adult inpatient
prevalence rate was approximately 40%. Guinness et al. reported that there was no significant difference between the groups that were HIV antibody positive and negative with regard to mean length of stay (9.3 days) and mean cost per patient admission (US$163) (9). However, HIV-antibody-positive inpatients accounted for 42% of the costs of the medical ward, which highlighted the increased demands placed on the hospital due to the HIV epidemic.

Guinness et al.’s study also captured patients’ out-of-pocket expenditure for the episode of care for patients who were HIV antibody positive and negative (9). Again, there was no significant difference between members of the two groups. Average out-of-pocket expenditure per episode of care was US$78, which was equivalent to 20% of the gross national product (GNP) per capita for Kenya. Thus, HIV has a significant impact on individual’s and their family’s expenditure and savings.

Cost-effectiveness of interventions

The literature regarding the cost-effectiveness of HIV/AIDS interventions in Africa was recently reviewed by Creese et al. (7). Their analysis included 24 studies that met their selection criteria from the 66 studies and reviews they identified. Standardized cost estimates were generated for 31 prevention, treatment and care interventions. Cost per HIV infection prevented (in US$ for the year 2000) and per disability-adjusted life year (DALY) were the outcome measures used. The cost for interventions varied widely from a few dollars to thousands of dollars (depending on the outcome measure used). Intervention
strategies that provide the ‘best buy’ were identified to be: blood safety measures (ie, blood testing); condom distribution alongside complete treatment of STIs; prevention of mother-to-child transmission using single-dose nevirapine or short-course zidovudine; tuberculosis treatment; and voluntary testing and counselling. All the ‘best buy’ interventions cost less than US$75 per DALY gained. Creese et al. concluded that high-quality cost-effectiveness research is required to guide HIV intervention planning and program evaluation (7).

The cost-effectiveness literature of HIV/AIDS interventions in low- and middle-income countries was recently reviewed by Walker (8). The results reported in Walker’s paper are generally similar to those reported by Creese et al. However, Walker is more critical of the costing methods used and the quality of the studies’ results. Walker’s review included 13 different countries – 2 in Asia, 2 in Eastern Europe and 9 in sub-Saharan Africa. He states that the studies were not robust enough to be readily generalizable across countries because the full range of interventions was not studied in any single country; because the interventions differed depending on the mode of transmission and stage of the epidemic; and, finally, because the cost-effectiveness of interventions varies according to the level of HIV antibody seroprevalence. Walker argued that “the methods applied to estimate costs in the studies reviewed give rise to questions of reliability, validity and transparency” (8:12). He concluded that the currently available cost-effectiveness evidence was of limited use to decision makers, and that a more robust database needs to be generated.

Papua New Guinea

To inform its policy development process, AusAID recently commissioned the Centre for International Economics to undertake a major study to examine the potential economic impact of an HIV/AIDS epidemic in Papua New Guinea (28). Interested readers may download a copy of the February 2002 report from the AusAID website (www.ausaid.gov.au). This section of the paper will present some of the major findings.

The potential for an HIV/AIDS epidemic of southern African proportions in Papua New Guinea is great (29) (Figure 2). The economic impact of such an epidemic in Papua New Guinea will be felt at the household, firm and national levels. A computable general equilibrium (CGE) model of the PNG economy was used to estimate the impact of HIV/AIDS on main economic indicators in 2020 (compared to a baseline estimate presuming the absence of HIV) (28). Scenarios were produced of levels of HIV antibody prevalence in adults that corresponded to the experience of three southern African countries. The low prevalence scenario was based on Kenya (10.4% in 1998), the medium prevalence scenario on South Africa (11.8% in the same year) and the high prevalence scenario on Zimbabwe (21.5%, also in 1998). The gross domestic product in Papua New Guinea was forecast to decline by 2.6% (low scenario) or 7.5% (high scenario). Real consumption may decline by 2.3% (low) or 6.6% (high). The current account as measured by per cent of GDP may decline by 0.5% (low) or 1.5% (high) and the budget surplus (per cent of GDP) may decline by 8.8% (low) or 20.8% (high). These are substantial economic effects that will be felt at the national and community levels by Papua New Guineans (Table 3).

The potential impact of the HIV epidemic on the different sectors in the Papua New Guinean economy varies and is moderated by the substitution of capital for labour in that sector. The mining sector suffers the smallest decline (0.6%) even under the high prevalence scenario. The effect on the plantation agriculture sector shows a decline of 2.8% (low scenario) or 7.9% (high scenario). The largest decline is forecast for the subsistence agriculture sector, ranging from 8.5% (low) to 24.2% (high), which is all the more troubling given the centrality of
subsistence and for-cash agriculture in PNG. Clearly, firms and the household members employed by them will feel the negative economic impact.

The health sector may experience a large increase in demand for services due to the HIV epidemic. Provincial hospitals may experience the largest increase in demand for services. The magnitude of the increase in demand could be similar to that of Hlabisa District Hospital in South Africa, where total admissions increased by 81%. District health centres in Papua New Guinea will no doubt face a large increase in demand as well. Successful prevention programs could reduce the demand for health care. However, a demand for treatment options in Papua New Guinea such as anti-retroviral drugs would substantially increase the cost of medical supplies, which is currently the third largest expenditure for a standard program category (30). Recently, the Director General of the World Health Organization stated that South Africa’s strategy of denying drugs to AIDS sufferers was wrong. He said, “You have to provide treatment as well as prevention. We have to make drugs, real drugs, available to people in the needy countries.” (31). Thus, HIV will no doubt exacerbate the Papua New Guinean health sector’s current difficulties.

Discussion

The evidence from southern Africa shows that unless Papua New Guinea is very successful in preventing the spread of HIV in the next 2 or 3 years the economic and social consequences will be large. Unfortunately, the outcomes of interventions to date have been disappointing. The UN/USAID team that reviewed the National HIV/AIDS Medium Term Plan (1998-2002) found many problems and “… little evidence of
TABLE 3

**Impact of HIV/AIDS on the main economic indicators - deviation from baseline in 2020, Papua New Guinea**

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Low scenario (8% HIV+ prevalence) %</th>
<th>Medium scenario (19% HIV+ prevalence) %</th>
<th>High scenario (25% HIV+ prevalence) %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Labour force</td>
<td>-13.2</td>
<td>-34.0</td>
<td>-37.5</td>
</tr>
<tr>
<td>Real GDP</td>
<td>-2.6</td>
<td>-6.8</td>
<td>-7.5</td>
</tr>
<tr>
<td>Real GDP per worker</td>
<td>12.0</td>
<td>41.0</td>
<td>47.9</td>
</tr>
<tr>
<td>Economic welfare (proxy for GNP per capita)</td>
<td>-5.8</td>
<td>-15.0</td>
<td>-16.6</td>
</tr>
<tr>
<td>Real consumption</td>
<td>-2.3</td>
<td>-6.0</td>
<td>-6.6</td>
</tr>
<tr>
<td>Real investment</td>
<td>3.9</td>
<td>9.9</td>
<td>11.0</td>
</tr>
<tr>
<td>Exports</td>
<td>-0.1</td>
<td>-0.2</td>
<td>-0.2</td>
</tr>
<tr>
<td>Imports</td>
<td>0.7</td>
<td>1.7</td>
<td>1.9</td>
</tr>
<tr>
<td>Current account (% GDP)</td>
<td>-0.5</td>
<td>-1.3</td>
<td>-1.5</td>
</tr>
<tr>
<td>Tax revenue</td>
<td>2.5</td>
<td>6.5</td>
<td>7.2</td>
</tr>
<tr>
<td>Budget surplus (% GDP)</td>
<td>-8.8</td>
<td>-19.4</td>
<td>-20.8</td>
</tr>
<tr>
<td>Real exchange rate</td>
<td>-0.6</td>
<td>-1.5</td>
<td>-1.6</td>
</tr>
<tr>
<td>Urban crime</td>
<td>-7.2</td>
<td>-16.6</td>
<td>-18.0</td>
</tr>
</tbody>
</table>

GDP = gross domestic product
GNP = gross national product

**Notes:**
1. Economic welfare refers to the full economic impact on domestic residents; this is distinct from GDP, which measures the impact on domestic production.
2. Tax revenue is stated in real terms by deflating with the price index for government consumption purchases.
3. The real exchange rate is defined as real kina per unit of real foreign currency.

Table based on Table 3.6 of Centre for International Economics Report of February 2002 (28)

Effectiveness in prevention or care” (2:7).

Global evidence indicates that the economic impact will be felt at the household, firm and national levels. Papua New Guinea’s export-led economic development strategy emphasizes further development of the rural agricultural sector. However, economic modelling forecasts that the agricultural sector may suffer the largest decline due to HIV. It is possible that the HIV epidemic will increase rural poverty. Even if income-per-worker rises, the dependency ratio will increase. Medical care and funeral costs may result in changed household expenditure patterns and children may be withdrawn from schools to care for ill relatives or due to the lack of money for school fees. The right prevention strategies need to be scaled up and implemented now!
‘best buys’ for Papua New Guinea. However, the current evidence base about the cost-effectiveness of interventions must be used with caution. Methodological issues need to be resolved. The generalizability of the evidence base is in question. The economies of scope that may be gained by using multiple interventions are unknown. Thus, policymakers are left in the dark as they attempt to choose the optimal mix of strategies to curb the epidemic.

World-class operational research is required in Papua New Guinea to improve the evidence base. The present stage of the epidemic in Papua New Guinea means that the rewards will be high for conducting prospective, longitudinal studies that monitor the costs and consequences of interventions while they are being implemented. Effective monitoring strategies will provide timely information to decision-makers for the improvement of interventions. The actions taken by households, firms and governments must be examined from economic and social perspectives. Strong partnership between multiple sectors of Papua New Guinean society must work together to prevent an HIV prevalence rate similar to that of Botswana or Zimbabwe.

Improved partnerships will also assist society to deal with other competing and sometimes contributing health problems such as malaria, tuberculosis, violence (and, more specifically, appallingly high levels of sexual violence) and tobacco smoking. The health sector cannot do it alone. All these major problems require improved partnerships to implement effective solutions. HIV may be the issue to rally around in order to develop synergies that affect multiple societal problems.

Conclusions

The AIDS pandemic continues to grow after 20 years of efforts to contain it. The epicentre of rising HIV transmission is moving east, and Papua New Guinea faces an epidemic of potentially southern African proportions. The potential costs both human and economic are large. Papua New Guinea can make a globally significant contribution to an improved knowledge base about the costs and consequences of HIV interventions. Effective monitoring and feedback systems can assist efforts to get ‘the biggest bang for the buck’. Improved information about household, firm and governmental adjustments to consumption and investment will assist the development of better policy. Policies not only in the health sector but in the agricultural sector as well could be improved. HIV is not the only societal ill to be addressed at this time. Enhanced partnerships both domestic and international are required for Papua New Guinea to overcome these challenges.

REFERENCES

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