

As we approach the 25th anniversary of the first recognition of HIV infection in 1981, this book reflects on the international impact of the disease. It has persistently remained a global issue, with more than 60 million people worldwide estimated to have been infected since that date. This ambitious book, written by 165 authors, contains 28 country case studies and 22 thematic chapters. This multi-country comparative study examines how the response to the common, global threat of HIV is shaped by the history, culture, institutions, and health systems of the individual countries affected.

The HIV Pandemic – local and global implications is unique in attempting to describe and assess a range of responses across the globe by situating them within the characteristics of each country and its health system. Chapters combine a health policy expert with an HIV specialist, allowing both a 'top down' health system approach and a 'bottom up' HIV-specific perspective. There are thematic and analytical sections, which provide an overview and some suggestions for solutions to the most serious outstanding issues, and chapters which analyse specific country and organisational responses. Increasingly, those involved are being forced to think differently about how services are financed, how resources are allocated, how systems are structured and organised, how services are delivered to patients, and how the resulting activity is monitored and evaluated, in order to improve the effectiveness, efficiency, equity, and acceptability of the response. There is no perfect health system, but the evidence provided here allows the sharing of knowledge and an opportunity to assess the impact of, and reactions to, an epidemic that must be considered a long-term issue.

The internationally recognised team of editors and contributors acknowledge that all parts of the health system must be involved to tackle the HIV pandemic. *The HIV Pandemic – local and global implications* will therefore appeal to all public health professionals and policy makers interested in health care systems, health services research, infectious diseases, aid, and development, as well as practitioners in the field.



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THE HIV PANDEMIC



local and global implications

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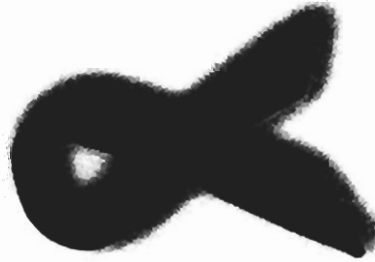


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The HIV Pandemic:

local and global implications

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Chapter 43

Fiscal and macroeconomic aspects of the HIV pandemic

Markus Haacker

Introduction

Health is a key aspect of development, and it also affects other development objectives, such as education and material living standards. HIV undercuts economic development in many ways [1,2]. Increased mortality associated with HIV is resulting in changes in the composition of the population, with increasing numbers of orphans in many affected countries. In the absence of formal or informal insurance mechanisms, and in light of the stigma associated with the epidemic, the epidemic impoverishes households of people living with HIV (PLHIV). These adverse effects on the microeconomic level can also have important implications for economic development [3].

This chapter is concerned with the implications of HIV on 'public policy', which comprises all areas of government activities, including but beyond the administration of health systems, the delivery of public health services, or the national response to HIV. The first of the chapter's three sections studies the impact of HIV on the ability of governments to provide public services. In countries facing an HIV epidemic, this is compromised because HIV results in a slowdown in government revenues and in higher mortality among public servants, while personnel costs increase. Concurrently, irrespective of the form the national response to HIV takes, the demand for some public services such as health and social services increases.

The second section discusses the fiscal dimension of the national response to HIV. In particular, the financing of health expenditures in low-income countries, both generally and in the context of HIV, is considered. The national response frequently involves a substantial increase in public spending, at least on a sectoral level, and a commitment of future resources. To ensure the sustainability of the programme, and to avoid disruptions owing to funding shortfalls, it is necessary to secure adequate and predictable financing. From the perspective of a ministry of finance, it is also important to understand the financial commitments implied by the national response, and to incorporate it in budget plans. The issue of fiscal sustainability is therefore discussed.

The response to HIV also has important macroeconomic implications, beyond mitigating the macroeconomic costs of the epidemic, owing to reduced incidence of infections and improved availability of treatment, which are addressed in the third section. The response to HIV raises issues of absorptive capacity, especially since much of the HIV-related spending is concentrated in the health sector, facing capacity and human resource constraints. HIV-related aid flows may affect the balance of payments and the composition of aggregate demand. If the exchange rate appreciates as a consequence of the increased availability of

The views expressed in this chapter are those of the author and should not be interpreted as those of the International Monetary Fund.

foreign currency, this can have an adverse effect on exports and the domestic production of tradable goods. However, the form of the macroeconomic adjustment depends on the fiscal stance and the way in which the Central Bank accommodates the increased supply of foreign currency associated with larger aid flows.

The social and economic impact

A discussion of the social and economic impact of HIV is beyond the scope of this chapter, and is provided in this book by Quinlan and Whiteside (Chapter 3). Here, we provide a selective discussion to highlight some of the challenges governments are facing.

The most commonly used measure of the economic impact of HIV is its impact on gross domestic product (GDP) and GDP per capita. While there is a consensus that HIV causes a slowdown of GDP growth due to its adverse effect on productivity and production costs, the effect on GDP per capita is less clear. A more detailed discussion of the various approaches that have been used to analyse the impact of HIV on GDP, GDP per capita or economic growth is provided elsewhere [3]. Here, we discuss the recent growth experience of the countries with the highest HIV prevalence rates. Figure 43.1 shows the evolution of GDP per capita in those countries since 1970.

Based on the experience of these countries, HIV seems not to have resulted in a dramatic drop in GDP per capita. The only country for which a slowdown in the growth of GDP per capita is discernible over the last years is Zimbabwe, and other reasons in addition to HIV are likely to have been operative there. However, compared with other African countries, growth in GDP per capita in the seven countries covered recently has not been impressive. Average growth of GDP per capita for the whole of Africa was more than 2% for the period 1994–2001 compared with the period 1984–1994 [purchasing price parity (PPP)]. For the

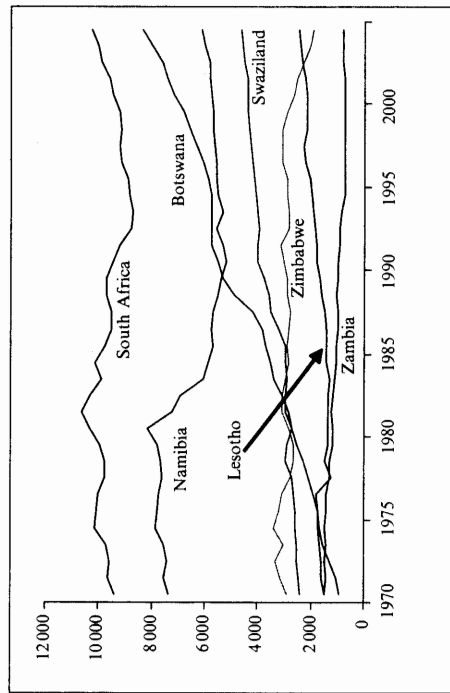


Fig. 43.1 GDP per capita for countries with high HIV prevalence (in US\$ at 2000 prices, evaluated at PPP exchange rates). Source: [5].

seven countries, however, growth of GDP per capita increased only by 0.3% over the same period, or 1.3% if Zimbabwe is excluded. Thus, it appears that the experience in the worst-affected countries is consistent with some modest impact of HIV on the GDP per capita growth rate.

It seems, therefore, that the impact of HIV on material living standards as measured by GDP per capita is, on average, relatively small. Nevertheless, a decline in the growth rate of overall GDP, reflecting slower growth or a contraction of the working-age population, has important consequences for government policy. As the domestic tax base is more or less directly related to the level of GDP, domestic revenues grow more slowly. Looking further ahead, a slowdown in GDP also has important consequences for the sustainability of public debt.

Most of the implications of HIV for public policy, however, arise from its impact on the individual or household level. First, the welfare costs of HIV arise primarily from increased morbidity and mortality, and go much beyond any losses in terms of material living standards. Estimates of the costs of increased mortality dwarf any available estimates of the costs on material living standards [4]. Estimates of welfare losses are useful because they put estimates of the costs of HIV in terms of GDP into perspective and provide a framework to integrate the losses associated with increased HIV-related mortality into an economic analysis.

The impact of HIV is very uneven across individuals and households, which has profound policy implications. The magnitude of the social impact of HIV and the challenges governments face as a consequence is proportional to the number of orphans generated as a consequence of their HIV epidemic. Increases in mortality among the working-age population are paralleled by an increasing number of children who become orphans (Table 43.1). In some countries, the number of orphans has already doubled or tripled. Moreover, available projections suggest that by 2010, the number of orphans will increase to around 20% of the youth in Botswana, Lesotho, South Africa, Swaziland, Zambia or Zimbabwe. It is important to note that these are averages for all youth under 17 years of age. As orphan rates among the very young are very low, this implies the existence of much higher orphan rates among teenagers. The challenges to public policy are manifold. Orphans tend to live in poorer households, especially as the number of orphans may exceed the capacities of families and communities to care for them adequately. Government may, therefore, engage in social policy measures to ease the burden on foster families or to support orphan-led households. Access to education is reduced (Table 43.1), especially in countries where enrolment rates are already low.

The impact on public servants

The impact of HIV on public servants may mirror the overall impact on the overall working-age population [8]. However, where HIV prevalence affects socio-economic groups differently, the impact on public servants could be different from the population average.

Most directly, HIV results in increased mortality and morbidity among government employees. As government employees become ill, absenteeism increases or their productivity on the job declines. For example, Grassly and others [9] estimated that absenteeism amounted to an average of 1.3 months annually per HIV-infected employee, with each infected worker experiencing 12–14 episodes of illness before the terminal illness [10].

Table 43.1 HIV and orphans in several African countries

Country	Orphans as share of the young population, 2003 ^a		Dependency ratio		Orphans' school attendance rate relative to non-orphans
	All	AIDS	Households with children but no orphans	Households with orphans	
Botswana	15.1	10.6	1.4	1.7	0.99
Côte d'Ivoire	13.3	6.2	1.4	1.5	0.83
Ethiopia	13.2	3.4	1.5	1.6	0.60
Malawi	17.5	8.7	1.5	2.0	0.93
South Africa	10.3	4.5	1.4	1.7	0.95
Uganda	14.6	7.5	1.7	2.3	0.95
Zimbabwe	17.6	13.5	1.4	2.2	0.85

^aYoung population defined as persons aged 0–17.

Sources: [6, 7].

For an HIV prevalence rate of 20%, this would translate into a rate of absenteeism of 2.2%. Another source of absenteeism is funeral attendance. Increased attrition is also associated with an increase in vacancy rates, which has a similar effect on the delivery of public services to that of increased absenteeism.

A second dimension through which increased attrition affects the efficiency of public services is the loss of skills, coupled with the costs of training. As staff members can be expected to remain in service for a shorter time period, the training costs to maintain qualified staff members rise. For example, if staff attrition rises from 5% to 7%, the time government employees can be expected to remain in service decreases from 20 to 14 years, while the costs of training to maintain qualified staff rises by 40%, assuming that each staff member receives some initial training. Increased mortality among staff results in fewer government employees reaching the age and experience they would normally attain to fill the most senior positions. As a consequence, critical positions in government need to be filled by less experienced or qualified staff. Based on estimated mortality rates for the Zambian population, the percentage of staff entering the public service at age 20 that can be expected to survive until age 50 drops from 80% to 40% [11].

Demand for government services

Whether or not the government pursues a proactive policy on HIV, it is likely to face an increase in the demand for public services, most notably in the health sector, but also in areas such as social services and education. This is most clearly formulated in terms of the demand for HIV-related health services. Estimates of the financial resource requirements for expanding the treatment of opportunistic infections and improving access to antiretroviral treatment (ART) are provided in Table 43.2. Coverage rates for the different forms of treatment will presumably differ among these countries, as will the ability of each country's health services to expand medical care. The estimated costs are based on a coverage rate for the care for opportunistic infections of 10% in 2003, rising to 50% by 2010. For ART, it is assumed that the number of patients receiving the treatment through public health services is negligible in 2003 and that coverage rises to 50% by 2010 [11].

Sources: [5, 12] and author's estimates.

Country	Total HIV-related health services, 2010	Of which: costs of ART, 2010	Total health expenditure, 2001	Total health expenditure, 2001 (US\$ per capita)	Public health expenditure, 2001	Domestic government revenue, 2001
Botswana	0.8	0.6	6.6	202	4.4	40.8
Ethiopia	9.7	7.0	3.6	3	1.5	18.8
Haiti	0.8	0.6	5.0	23	2.7	10.0
Lesotho	3.8	2.8	5.5	21	4.3	43.0
Malawi	7.8	5.7	7.8	13	2.7	33.1
Mozambique	6.6	4.8	5.9	12	4.0	34.6
Namibia	1.4	1.0	7.0	121	4.7	30.1
South Africa	0.6	0.4	8.6	225	3.6	26.8
Swaziland	1.3	1.0	3.3	39	2.3	30.7
Tanzania	2.5	1.8	4.4	12	2.1	16.1
Uganda	2.2	1.6	5.9	15	3.4	19.8
Zambia	3.9	2.8	5.7	20	3.0	32.1
Zimbabwe	3.3	2.4	6.2	44	2.8	37.6

Table 43.2. Indicative estimates, in percentage of GDP (unless otherwise stated) of the costs of HIV-related health services, 2010

Overall, the costs of attaining these levels of HIV-related health services are substantial for all the countries covered in Table 43.2, ranging from 0.6 to 9.7% of GDP. These differences in cost stated as a percentage of GDP partly reflect differences in income per capita. Therefore, two of the countries with very high HIV prevalence, Botswana and South Africa, are among those that could conceivably substantially finance expanded access to treatment. However, even for these countries, the financial burden is daunting from a sectoral perspective, corresponding in South Africa to 17% of the health budget and over 2% of total government expenditure. On the other hand, the required expenditure exceeds 5% of GDP for three countries—Ethiopia, Malawi and Mozambique—and exceeds total public health expenditure as a percentage of GDP in 2001 for these and four other countries, namely Côte d'Ivoire, Tanzania, Zambia and Zimbabwe.

The indirect fiscal costs of HIV

While the costs of a national response to HIV can be very substantial, an understanding of the impact of HIV on public finances also requires an assessment of the indirect costs of HIV. In addition to the directly HIV-related expenditures on prevention and treatment, there are indirect costs related to those expenses that are not covered by a specific HIV line item in the government budget. While the dividing line between direct and indirect expenditures is sometimes blurred—for instance, investments in health infrastructure or orphan support—it is a useful distinction to make, because external grants are primarily available for direct HIV-related expenditures, and not for the indirect costs. Thus, while indirect expenditures are lower than the costs of an effective response to HIV, they are disproportionately important in terms of their impact on the fiscal balance and thus public policy.

The most important of such indirect costs are increases in personnel expenditures caused by increased mortality and morbidity, such as pensions to surviving dependants or medical benefits. In case of pensions and other death-related benefits, it is important to look at the net rather than the gross effect. While pensions or one-off benefits for surviving dependants increase, fewer government employees reach retirement age and outlays for old-age pensions therefore decline. However, the net effects on the costs of pensions and death-related benefits are likely to be positive, as death-in-service benefits are typically higher for employees dying early, relative to their previous contributions. One study from Swaziland [13], for example, estimated that the overall costs of the pension scheme would rise by 2–4% of the government's payroll, or 0.3–0.6% of GDP. Other indirect costs include rising medical benefits, although these may be accounted for and financed as part of the national response to HIV; the costs of increased absenteeism, which may take the form of efficiency losses rather than a fiscal cost; and various other forms of social expenditure.

Debt sustainability

Additional pressure on government finances arises from the dynamics of the accumulation of public debt. The most common measure of a country's indebtedness is the *Debt/GDP ratio*. An increase in the government deficit, by increasing Debt (*D*), would result in a rise in this ratio, whereas an increase in GDP (*Y*) would reduce it. The evolution of the *Debt/GDP ratio* can be described by:

$$\left[\frac{D}{Y} \right] = r + f \frac{Y}{D} - g - n \quad (1)$$

where r = the interest rate on public debt; f = the government deficit, including grants, but excluding interest on public debt; g = the rate of growth of GDP per capita; and n = the population growth.

The rate of GDP growth thus is equal to $g + n$. Suppose that the government aims to maintain the *Debt/GDP ratio* at some level $[\frac{f}{g}]^*$. This requires that the fiscal does not fall below a level given by:

$$f = (g + n - r) \left[\frac{f}{g} \right]^* \quad (2)$$

As HIV results in a slowdown in economic growth, i.e. as g , n or both decline, it has some implications for the fiscal balance required to sustain the *Debt/GDP ratio* that is deemed sustainable. For example, if the government aims to keep this ratio at 50% of GDP, and if GDP growth ($g + n$) declines by one percentage point, this would require a fiscal adjustment of 0.5% of GDP. For some of the worst-affected countries, the US Bureau of Census estimates that population growth (g) has declined by 1.5–2%; even maintaining moderate levels of public debt of 20–30% of GDP would require an adjustment in the fiscal balance of 0.3–0.6% of GDP.

These examples demonstrate how an economic slowdown tightens the scope for public spending while, in the context of HIV, the government also faces considerable additional demands. Taking a longer perspective, the government may therefore respond to the needs associated with a health emergency and temporarily run a higher fiscal deficit. The evolution of public debt is then described by equation (1). To ensure that the national response to HIV is ultimately sustainable, the eventual level of public debt implied by the government's programme would have to be sustainable in order to avoid a disruption of services in the future. The programme thus needs to be embedded in a medium- or longer-term financial plan.

Summary

Our analysis so far has set the stage for a discussion of the fiscal and macroeconomic aspects of the response to HIV. It shows how HIV erodes the government's human and financial resources, while the demand for government services increases. In countries facing severe epidemics, HIV represents a significant challenge for the management of government finances and public services. The design of policies to respond to the epidemic thus needs to be mindful of the fact that this takes place in a context where the government's fiscal position is under pressure, owing to the epidemics' direct and indirect costs, and, in the longer run, as it becomes more difficult to sustain the level of public debt.

Some fiscal aspects of the response to HIV

In many countries, the national response to HIV involves changes in public expenditures that are significant compared with the government's budget overall, or which imply a substantial increase in expenditures in a particular sector, such as health services. Some of the fiscal aspects of HIV have already been discussed in terms of the demand for government services, or the implications for the sustainability of public debt. Here, the fiscal dimension of increased HIV-related expenditures is explored further.

In terms of the financing of the response to HIV, the situation differs across countries. Not only does the extent to which public health services are financed externally differ substantially across countries, but there are also important differences in the mix between public and private financing within countries.

The perception of HIV as a serious global health crisis has translated into a strong response by the international community. As issues regarding the response to HIV transcended the expertise of any UN agency, UNAIDS was established to coordinate the global response, and the Global Fund to Fight AIDS, Tuberculosis and Malaria (Global Fund) was set up as a specialized agency that provides financing for national responses to HIV. The Global Fund is largely financed by grants from public sources. UNAIDS estimates that spending on HIV in 135 low- and middle-income countries reached US\$6 billion in 2004, of which US\$3.7 billion was financed by external grants, and that on current trends, international disbursement will reach US\$7 billion by 2007, contributing to an increase of around US\$10 billion. About half of the estimated costs of scaling up HIV activities in low- and middle-income countries would go towards prevention-related activities, one-third towards treatment and care, and 10% towards orphan support. These are averages, and different countries with different epidemics and different HIV prevalence rates will spend resources differently.

While the level of funding available still lags far behind what UNAIDS deems necessary for a comprehensive response to HIV, external finance has enabled some of the countries experiencing severe HIV epidemics to increase spending on HIV substantially. For Ethiopia, Kenya, Malawi, Mozambique, Swaziland, Tanzania, Uganda and Zambia, externally financed HIV spending accounted for all or most of the increases in health spending between 2000/2 and 2002/4. In Uganda and Zambia, externally financed HIV spending now exceeds total domestically financed public health expenditures [14]. Even though not all of these additional expenditures finance additional health services, these numbers suggest that the increase in expenditures on the sectoral level can be very substantial.

In light of the key role of the health sector in countries with severe epidemics, it is important to note that the financing of health services differs significantly across countries. The share of public expenditure in total health expenditure varies across the countries covered, from 16% in Côte d'Ivoire to 79% in Lesotho. Most public health expenditure is financed by either taxation or external resources. One exception is Thailand, where public health insurance plays an important role. For countries with a relatively low income per capita, external assistance is an important source of financing. In Malawi it accounts for 87% of public health expenditure, and 41% of total health expenditure.

A second important difference across countries is the availability of private health insurance ('pre-paid private financing', see Table 43.3). For many of the countries, the share of private out-of-pocket health expenditure is high by international standards, especially as a proportion of total private health expenditure. This reflects the relatively minor role of private health insurance in many low-income countries. Correspondingly, for Botswana, Namibia, South Africa and Zimbabwe—countries with a relatively well-developed insurance sector—private out-of-pocket health expenditure is less important.

These discrepancies across countries are relevant in terms of financing the response to HIV, particularly for prevention, treatment and care. In the absence of some form of health insurance, households are hard pressed or would find it impossible to pay, particularly for the costs of treatment. In many low-income countries, private health insurance is limited to the public sector and parts of the private sector, frequently only covering small—and often the most affluent—population groups. In this situation, the public health sector, or publicly financed private health providers, have a key role in expanding access to treatment to lower-income groups, and thereby ensuring against a reduction in material living standards associated with the epidemic.

Detailed data like those presented in Table 43.3 are not available for the financing of HIV-related health expenditure. However, Martin [15] analysed the financing of HIV-related public expenditure in Botswana, Lesotho, Mozambique, South Africa and Swaziland. Her findings showed that the role of external finance for HIV-related expenditure is even more pronounced than that for general health expenditure. With the exception of South Africa, which receives very little external aid, external financing accounted for between 79 and 85% of HIV-related public expenditure in these countries. This is also in line with UNAIDS' global estimates of the financing of HIV-related spending in low- and middle-income countries, according to which over 60% of HIV-related expenditures were financed by international disbursements. As these countries include Brazil and South Africa, which account for a substantial proportion of domestically financed spending, this means that the proportion of external financing is much higher for many low-income countries.

Domestic financing

While external financing plays an important or even dominant role in financing the national response to HIV in many countries, some of the costs need to be financed from domestic revenues or additional borrowing. While in some countries the entire costs of the response to HIV may be financed by external grants, donors would expect a higher share of domestic financing from countries with higher levels of GDP per capita. For example, the World Bank differentiates the terms of its loans according to a country's gross national income (GNI) per capita, and restricts access to its most concessional type of loans to low-income countries (GNI of US\$765 per capita or less). The Global Fund uses income categories similar to those established by the World Bank. For example, the Fifth Call for Proposals stipulates that partnerships from countries classified as 'Low Income' by the World Bank are fully eligible to apply for support from the Global Fund, whereas low middle-income countries (GNI between US\$765 and US\$3035 per capita) and high middle-income countries (GNI between US\$3035 and US\$9385 per capita) have to provide 10–20% and 20–40%, respectively, of domestic financing. Moreover, in middle-income countries, the Global Fund only underwrites proposals that target poor and vulnerable populations.

More broadly, the issue of domestic financing arises because external financing is generally available only for specific projects or programmes, which would not cover all of the costs of the HIV epidemic to the government. For example, the government would have to finance higher costs of medical and death-related benefits, and other costs related to higher mortality among staff.

In terms of raising additional resources to finance the national response to HIV, it is useful to distinguish between general tax revenues and private financing for specific services. The scope for raising additional tax revenues is generally limited. Even if inefficiencies in the collection of taxes exist or the domestic tax base is relatively narrow, addressing those shortcomings is time-consuming and can be politically difficult. Also, raising taxes can further squeeze the profitability of businesses that are already coping with the adverse impacts of HIV on their employees.

If the scope for raising additional revenues is limited, the government may have to resort to cuts in other areas of expenditure. However, these cuts are problematic if they compromise other expenditure programmes that are desirable from a development perspective, and they may draw resistance from line ministries or other interest groups involved. Nevertheless,

Including 26.8% of total public health expenditure financed by the social security system.
Source: [12].

	Total US\$	Public % of total	Public: external resources % of public expenditure	Private % of total	Private out-of-pocket % of private expenditure	Private pre-paid % of private expenditure
Botswana	202	6.6	66.2	0.6	33.8	64.7
Brazil	222	7.6	41.6	1.2	58.4	64.1
Côte d'Ivoire	39	6.2	16.0	20.0	84.0	89.7
Ethiopia	3	3.6	40.5	84.7	59.5	15.3
Haiti	23	5.0	53.4	80.3	46.6	54.7
Lesotho	21	7.8	78.9	7.6	21.1	0.0
Malawi	13	7.8	35.0	75.7	65.0	60.7
Mozambique	12	5.9	67.4	54.7	32.6	82.1
Namibia	121	7.0	67.8	5.6	32.2	77.9
South Africa	225	8.6	41.4	1.0	58.6	0.0
Swaziland	39	3.3	68.5	11.5	31.5	100.0
Tanzania	12	4.4	46.7	63.2	13.0	77.9
Thailand	69	3.7	57.1	0.2	43.3	0.0
Uganda	15	5.9	57.5	43.1	22.7	16.9
Zambia	20	5.7	53.1	91.7	46.9	15.0
Zimbabwe	44	6.2	45.3	17.2	54.7	47.8

while the inherited allocation of expenditures reflects a political consensus about spending priorities, the demand pressures associated with a health emergency may provide an impetus for shifting this consensus and addressing inefficiencies in the delivery of public services or reducing low-priority expenditures. Such items could include a 'revision of existing subsidy programmes, spending cutbacks on defense and internal security, or police, reduced foreign travel or embassy expenses, or rationalization of elements of the civil service that are of low (or zero) productivity (e.g. the frequent problem of overstaffing or even ghost workers)' [16].

Fiscal sustainability

The concept of fiscal sustainability 'relates to the capacity of a government, at least in the future, to finance its desired expenditure programmes, to service any debt obligations, and to ensure its solvency' [16]. From another perspective, fiscal sustainability implies that the allocation of resources is optimal not only within the budget for a given year, but also over time. Below, we will first address issues regarding the sustainability of public spending in the context of HIV in general; then we will discuss some issues specific to externally financed expenditures.

The issue of fiscal sustainability was already introduced in our discussion of the sustainability of public debt. The key lessons from that discussion are that HIV has a negative impact on the fiscal balance, irrespective of the modalities of the national response to HIV, and that in an environment where GDP growth is weakening, the government would eventually have to tighten the fiscal balance in order to sustain a level of public debt that is deemed sustainable. Thus, the HIV epidemic is associated with a tightening of government finances in the longer run.

However, within the planning horizon of a national response to HIV, which, for practical purposes, rarely exceeds 5 years, other considerations are also relevant. First, in many countries, external grant financing substantially contributes to financing the expansion in government expenditures. Secondly, it is common that governments adapt the fiscal stance to accommodate temporary fluctuations in government finances or particular pressing needs. Examples include anti-cyclical fiscal policy, and the management of oil or diamond revenues, part of which may be invested rather than spent, or higher spending in emergency situations such as wars or post-conflict reconstruction.

In light of the pressing needs associated with an HIV epidemic and the risks to welfare and economic development, the government may decide to finance the costs of the national response to HIV, to the extent that it is not financed by grants, but by higher borrowing. However, in the interest of the sustainability of the programmes underwritten by higher borrowing and government spending overall, it is important that the national response to HIV be integrated into a medium-term financial plan. Such a plan needs to specify anticipated government revenues and expenditures, including the national response to HIV, and ensure that expenditure programmes, within an annual budget and over time, reflect the government's priorities.

Fiscal sustainability issues also arise in the context of external financing. External grants typically underwrite particular projects or programmes, with disbursements tied to the stage of implementation. Where grants underwrite broader programmes rather than specific one-off projects, their time horizon seldom exceeds 2 or 3 years. In terms of planning the national response to HIV, this is problematic, as its time horizon substantially exceeds this time frame.

Furthermore, the type of expenditures underwritten by HIV-related grants differs from those supported by other forms of development finance. The latter is typically geared towards capital expenditures or capacity building. In this case, the grant underwrites at least part of the initial investments, whereas the government covers the maintenance or operating costs. This means that after the initial investment phase, supported by external grants, the financial exposure to the government is limited. In the context of the national response to HIV, however, the situation is different, as the grants are geared towards current expenditures, such as salaries or medical purchases. This means that the government carries a higher financial risk in case a grant is not renewed or alternative sources of external financing are not identified to sustain the programme.

To ensure that HIV-related activities 'on the ground' are fully consistent with the objectives of the national response to HIV, it is therefore important that there be a strong national coordinating mechanism—a necessity recognized within the UNAIDS framework of 'The Three Ones'. This includes a National HIV Programme that provides the basis for coordinating the work of all partners, and a National AIDS Coordinating Authority with a broad-based multisectoral mandate. In countries where the size of the response to HIV is significant from a macroeconomic or fiscal perspective, it is important that the agreed HIV Action Framework be adequately integrated into the government's medium-term fiscal planning. It is also important that the HIV Action Framework be consistent with the government's macroeconomic and fiscal policy objectives. This requires that the ministry of finance take an active part in the formulation of the national HIV Action Framework, to help develop the medium-term budgetary implications of the national response to HIV and ensure that adequate financing, from domestic or external sources, is available to underwrite the programme.

In terms of fiscal sustainability, it is also important to differentiate between grants and loans. Grant-financed expenditures raise sustainability issues only if the expenditures underwritten by the grant at some stage need to be financed in some different way, so that what is grant financed today nevertheless implies a potential future financial liability. This is also the case with loan-financed expenditures; however, the loans eventually have to be repaid, which adds to the future financial liabilities associated with the response to HIV.

Another important issue that needs to be taken into account is that the government's resources and the need for public spending in the future depend on the success of the national response to HIV. As increasing prevention efforts result in a decline in the incidence of new infections, this means that the number of people requiring various forms of treatment will eventually decline and the adverse social and economic effects of HIV will be mitigated.

This issue has been explored by Masha [17] in a study motivated by Botswana's national response to HIV. The study compares projections included in a study by the Botswana Institute for Development Policy Analysis (BIDPA) [18] and those implied by the targets of Botswana's National Strategic Framework (NSF) on HIV [19]. The BIDPA study is a very thorough impact analysis, also covering indirect expenses associated with HIV not accounted for in the NSF, such as social expenditure and higher personnel costs, and fiscal savings associated with lower numbers of students. The NSF spells out a comprehensive programme to reduce the incidence of new infections and expand access to treatment; consequently, spending on health and prevention, and in some other areas, exceeds that projected by BIDPA. By 2010, the NSF envisages greatly reduced mortality rates, primarily as a result of

Table 43.4 Indirect fiscal gains (% of GDP) from Botswana's National Strategic Framework on HIV, 2010

	BIDPA (2000)	NSF (2003)	Indirect fiscal gains
Health/prevention	3.5	5.0	-
Social expenditure	1.5	0.7	0.8
Public service	0.8	0.3	0.5
Education	-0.3	-0.1	-0.2
Other	-0.2	3.0	-

Source: [17].

increased access to ART. The fiscal savings associated with the NSF were calculated on the basis of BIDPA's estimates of the indirect expenses, which were scaled down in line with lower mortality rates. Masha (Table 43.4) found that by 2010, the fiscal savings in the areas of social expenditure and public services, partly offset by higher education spending, amounted to 1.1% of GDP, or 14% of the costs of the entire NSF. These estimates, however, certainly understate the savings involved, as they do not include the savings within the areas of health and prevention. In particular, going beyond 2010, successful prevention efforts would eventually result in a substantial decline in treatment costs.

Some macroeconomic aspects of the response to HIV

There are three principal types of issues arising in terms of the macroeconomic consequences of an expanded response to HIV. First, the response to HIV may entail an increase in demand for particular services or aggregate demand that is inconsistent with the productive capacity of the economy. Secondly, increased aid flows may skew the balance of payments and may result in an appreciation of the exchange rate. Thirdly, large aid flows have implications for monetary policy, as the Central Bank has different options to accommodate the increased supply of foreign currency, and these, in turn, have important macroeconomic implications.

Bevan [20] discusses a fourth dimension—the impacts on the institutional and political framework arising if high aid inflows 'induce aid dependency, weakening a government's capacity to generate domestic resources, and undermining the democratic process'. In light of the very specific programmes underwritten by HIV-related grants, these issues are less important in the present context than in other areas of development assistance and are not discussed here.

Before considering the various macroeconomic implications of increased aid flows, one aspect they have in common should be discussed: the scale of the effect depends, of course, on the size of the aid flows, but also on the way in which aid is used. This can involve imports of goods, frequently investment goods; in the context of HIV, aid could also finance medical supplies, including antiretroviral drugs, imports of services such as foreign consultants, purchases of domestic goods, services from domestic suppliers and salaries of domestic staff. To the extent that external aid is used for the importation of goods and services, the macroeconomic effects are mitigated, the inflow of currency is partly offset by the payment for these imports, the direct effects on domestic demand are mitigated, and the size of the net inflow of foreign currency, and therefore the monetary policy challenge, is reduced.

Absorptive capacity

Absorptive capacity needs to be considered in terms of the relationship between aggregate supply, the economy's productive capacity (Y), and aggregate demand. The latter is generally divided into the government's domestic demand (denoted by G), private expenditure ($C + I$, for consumption plus private investment) and the excess of exports (X) over imports (M).

In general, the inflationary impact of aid-financed expenditures depends on how well it is used, in terms of enhancing economic development and thus the productive capacity of the economy. The national response to HIV can have a positive effect on Y . First, most of the positive effects of HIV-related spending serve to mitigate the adverse impact on Y . If anything, Y would therefore decline in our framework. Secondly, many of the economic benefits of a national response to HIV, most notably those of increased prevention efforts, materialize only over time and would not have any immediate effect on Y .

The national response to HIV results in an increase in government expenditure, unless the increased government spending on HIV is financed by a reallocation of expenditures. If it is financed out of additional taxation or domestic borrowing, the increase in G is largely offset by a decline in $C + I$. If it is financed from external resources, the macroeconomic adjustment is more complex. One possibility is that this will have an inflationary effect and will eventually crowd out private expenditure ($C + I$, consumption plus private investment—Fig. 43.2), for example as real interest rates rise ('Case 1' in Fig. 43.2). Another possibility is that the imbalance in the balance of payments results in an appreciation of the exchange rate. The increase in government spending would then be offset by a decline in net exports ($X - M$, exports minus imports—'Case 2' in Fig. 43.2). In the longer run, an assessment of the macroeconomic consequences becomes more complex, as the productive capacity of the economy also depends on investment and the success of the national response to HIV. This is beyond the scope of this chapter [17].

It is first important to note that HIV-related expenditures, while large from a sectoral perspective, still constitute only a small proportion of GDP and usually are not the largest part of external aid. Thus, HIV may exacerbate any issues regarding the domestic absorption of external aid on the macroeconomic level, but would not give rise to such problems by itself. Secondly, this macroeconomic view misses out on many of the complexities of developing the national response to HIV. The reason for this is that HIV-related spending is relatively narrowly focused on particular sectors and—at least in the area of the delivery of health services—requires services with very specific skills whose availability can be limited. Another important constraint is managerial capacity, or, where services are delivered by different providers in a decentralized fashion, the coordination of activities in the context of rapidly expanding HIV programmes; these tasks also require very specific and scarce skills.

Institutions such as the World Health Organization (WHO), in developing strategies to respond to the HIV epidemic, have taken into account the existing capacity constraints in key

$$\text{Case 1: } Y_{\text{(fixed)}} = G + I + C + X - M_{\text{(down)}}$$

$$\text{Case 2: } Y_{\text{(fixed)}} = G + I + C + X - M_{\text{(down)}}$$

Fig. 43.2 Increased government expenditure and macroeconomic adjustment.

costs are denominated in domestic currency, the economic rents from resource extraction could decline. At the same time, it becomes cheaper to import, and as domestic buyers switch to imported goods, the demand for domestically produced goods declines.

This adverse impact of aid on exports is referred to as 'Dutch disease'. Historically, the term was coined to describe the economic effects of revenues from oil exploitation on the Dutch economy. Its economic and political significance arises partly from its distributional effects. Profit margins of exporters are squeezed to the extent that some may go out of business, and any changes in the prices of export goods are likely to translate into income losses to farmers or workers in the export sectors. Conversely, there are beneficiaries of aid, such as, for example, the recipients of goods and services and those gaining employment directly or indirectly as a consequence of higher aid flows. As the latter are usually not the same as those who suffer income losses, this can result in political conflict. 'Dutch disease' also has a longer-term dimension. To the extent that exports are an engine of growth and broad-based development, a loss in competitiveness and, consequently, a decline in exports would have a negative impact on a country's development prospects. However, HIV-related aid also finances expenditures that are productivity- and thus growth-enhancing by mitigating the adverse impacts of HIV, and these effects need to be taken into account in an assessment of the impact of increased aid flows on competitiveness.

Monetary policy and inflation

Monetary policy can have some impact on how the macroeconomic adjustment to higher aid flows plays out. This can be illustrated using two basic policy scenarios. In one scenario, the Central Bank does not buy any foreign exchange, and in the second scenario, the Central Bank does buy foreign currency. The actual policy taken by the Central Bank, of course, may be somewhere in between. Also, the Central Bank has more policy instruments at its disposal than described in the second example, and could therefore achieve similar objectives somewhat differently.

In the first case, the Central Bank does not buy any foreign exchange, which is a policy referred to as a 'free float'. This means that the increased supply of foreign currency results in a drop in the price of foreign currency on the domestic market, resulting in an appreciation of the domestic currency, with exports becoming less competitive and imports becoming cheaper. This case is described above in the section on the balance of payments and need not be repeated here. We just note for reference that the bulk of the adjustment is borne by the export sector or domestic producers of products competing with imported goods.

Alternatively, the Central Bank may buy some or all incoming foreign currency, thereby accumulating foreign currency reserves, and at the same time increasing the domestic money supply. This would have an expansionary effect, as liquidity in the economy increased, credit became cheaper and aggregate demand increased. Eventually, inflation would start to rise, and consequently, while the exchange rate remained constant, domestic products would become more expensive than foreign products, exports less competitive, and imports cheaper. This would mean an outcome very similar to the scenario described above, although the adjustment in the real exchange rate, or prices in the domestic economy, compared with prices in other countries, might take more time to develop and be accompanied by an inflationary period.

If the Central Bank aimed to keep inflation under control, or if it were concerned about the effect that an appreciation of the country's exchange rate would have on the economy, it could pursue a somewhat different policy and 'mop up' the additional liquidity by issuing

sectors. For example, the Commission on Macroeconomics and Health emphasized the need for decentralized provision of health services [21], thereby reducing the needs for the scarcest, most highly trained category of health personnel. Similarly, the WHO/UNAIDS '3 by 5' initiative, which aimed to expand access to ART rapidly, included a strong training component.

One factor that can either exacerbate or ease the shortages of staff in the health sector is international migration. International migration is in many ways a positive phenomenon, allowing migrants to attain incomes higher than they would earn in their home countries, while remittances of expatriates can contribute to raising living standards in their home countries. At the same time, the prospect of health services in some of the countries facing severe HIV epidemics being overwhelmed by the additional demands, while trained nurses or doctors leave that country to accept higher-paying positions abroad, raises some awkward questions.

It is important to note that migration also occurs within sub-Saharan Africa and even involves countries from outside the region. For example, about half of the doctors working in the public health sector in Swaziland are expatriates, while, according to anecdotal evidence, many Swazi health professionals work abroad. Thus, while sub-Saharan Africa as a whole experiences a 'brain drain' of health professionals, there is some evidence that countries experiencing catastrophic health situations are able to attract health professionals from other countries, thus mitigating the very tight constraints on the availability of domestic health professionals. One consequence, of course, is a higher rate of brain drain from poorer countries within the region, thus exacerbating the scarcity of health personnel in those countries.

While training staff is a time-consuming proposition and subject to capacity constraints on the level of training institutions, there are two additional ways to increase the availability of trained personnel: increasing retention rates and improving the efficiency of the public service [22]. Of particular relevance to this discussion is that both propositions would probably require increases in salaries of health personnel, and thus have an impact on the fiscal balance. In the public sector, substantial salary increases granted to one group of public servants might result in claims from other branches of the public service. Thus, the fiscal implications of addressing bottlenecks in the health sector can be wider.

Increased aid flows, the balance of payments and the exchange rate

Increased aid flows, to the extent that the respective funds are not directly spent on imports of goods or services, bring about a change in the balance of payments and an inflow of foreign currency. It does not make a big difference if increased aid flows come in the form of grants or concessional loans. However, in terms of the balance of payments, the former are accounted for as a transfer, while the latter are accounted for as a loan.

The supply of foreign currency on the domestic market thus increases, and the price of foreign currency declines. In other words, the domestic currency appreciates.

As a consequence, domestic exports become less competitive, and the export sector may contract. For countries exporting products such as oil, timber or mining products, where royalties or rents from resource extraction account for a significant proportion of government revenues, an appreciation of a country's currency can also have a direct impact on the fiscal balance. This could reduce the value of royalties in domestic currency terms, and, as

treasury bills, or some other measures, such as increasing the commercial banks' reserve requirement. As banks or the general public purchase treasury bills, the liquidity in the economy and the availability of credit decline, and domestic interest rates rise. This has an adverse impact on investment and consumption, and aggregate demand would thus decline. As a consequence, the inflationary impact would be less severe, and the impact on net exports less pronounced. One possible effect of this policy, however, is that the increase in domestic interest rates would put additional pressure on the government budget, as it also implies an increase in interest on the government's domestic debt.

Some concluding remarks

Our discussion set out from an analysis of the impact of HIV on government's capacities, through its economic impact, to loss of human lives and fiscal costs. The main body of the chapter, however, describes the fiscal and economic dimension of the response to HIV, especially in countries facing severe epidemics or receiving considerable amounts of external aid. Most importantly, the chapter aims to help develop appropriate and effective health system responses to the HIV pandemic. In this context, our analysis is relevant from several different perspectives.

First, it describes the constraints to governments facing an HIV epidemic among the population, and thus formulates the background against which a national response to HIV is implemented. The epidemic not only erodes the government's human resources, but also has a negative impact on government finance. While various studies do address some aspects of the fiscal impact of HIV, this is not normally done in an integrated fashion, nor is it included in the costing of a national response to HIV.

Secondly, the epidemic—and the modalities of the national response—have significant implications for government finances, and these are not fully understood so far. To ensure that the allocation of resources reflects the government's objectives, both within a given budget and over time, it is important that the costs of HIV be properly estimated and included in the budget and longer-term fiscal planning.

Finally, in light of the large scale of the national response to HIV and the rapid increases in expenditures envisaged, and to ensure that the national response is *sustainable*, it is essential that this be adequately planned. This involves recognizing existing capacity constraints and developing strategies to overcome them—a common theme in efforts to formulate recipes to address the epidemic, and referred to in the discussion of absorptive capacity. In terms of government finances, it involves projecting the impact of HIV and the costs of the national response to HIV, identifying sources of external financing and estimating the domestic financing requirements. Where there is uncertainty about the availability of financing, it is important to specify those risks and develop contingency plans to ensure that key services are maintained.

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