

POLICY BRIEFS ON

ECONOMIC IMPACT OF HIV



6.

PRODUCTIVITY AND EMPLOYMENT OF PEOPLE LIVING WITH HIV

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6.

PRODUCTIVITY AND EMPLOYMENT OF PEOPLE LIVING WITH HIV

KEY POINTS

- Early on, there were concerns that AIDS-related mortality would erode state governance and institutions and thus compromise economic development, but there is little evidence to suggest that such effects have been significant.
- HIV – especially at late stages of disease progression – results in reduced productivity and lower employment of people living with HIV, though the economy-wide effects are unclear.
- Treatment has been effective in restoring the productivity and – with some delay – employment of people living with HIV.
- Early access to treatment plausibly prevents spells of unemployment, which are an important cause of the adverse economic consequences of HIV.

HIV potentially affects productivity in both a very general and a concrete sense. Especially during the escalation of the epidemic, there were concerns that steeply increased mortality would hollow out the functioning of the state and institutions, affecting the productivity of the economy overall.

More concretely, there is substantial evidence on the adverse effects of HIV on the economic activity of people living with HIV – through reduced employment and, if employed, lower productivity on the job or absenteeism – and the role of treatment in reversing some of these effects.

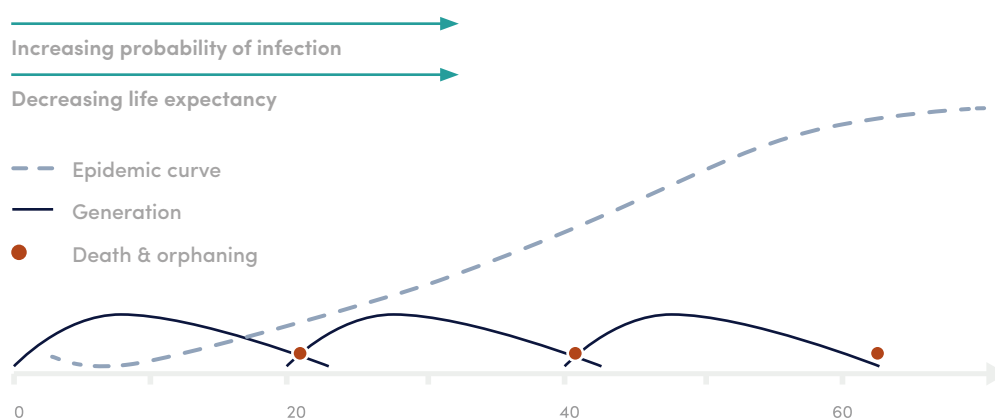
Governance and institutions

Governance and institutions create an enabling environment for economic development. High observed and anticipated mortality among public servants initially fuelled concerns about a potential collapse of state functions, but such dramatic effects have not materialised.

One of the concerns about the potential economic impacts of HIV regarded social cohesion and good governance – crucial factors in attaining sustainable growth (World Bank, 2017). The absence of such factors impedes economic growth directly by driving up the costs of doing business, but also by increasing uncertainty and discouraging investment (World Bank, 2020).

With regard to social cohesion and institutional development, there was a fear that owing to increased mortality the future would carry less weight in individuals' decision-making, and this in turn could discourage forward-looking behaviour and increase corruption, which has quicker pay-offs (de Waal, 2003). Second, and more generally, it was feared that HIV could result in a destabilising cycle, through reduced life expectancy, high rates of orphanhood and inadequate socialisation of orphans and vulnerable children, which might in turn contribute to the spread of HIV (Figure 6.1; Barnett 2006). The force of any such processes, though, has been radically weakened by the decline in AIDS-related mortality owing to widespread access to treatment.

Figure 6.1: Evolution of HIV epidemic and intergenerational impacts

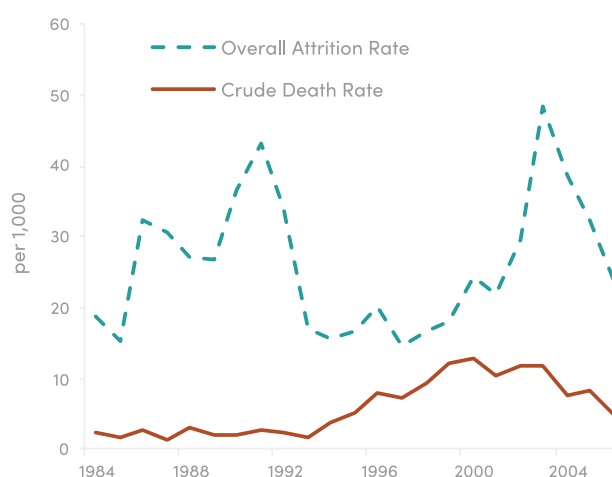


Source: Adapted from Barnett (2006), with the author's permission.

More concretely, HIV has eroded the capacities of the civil service through increased mortality among public servants. This process has been well documented, e.g., in Botswana, where mortality among police and prison officers increased about 5-fold from 0.3 percent in 1992 to 1.3 percent in 2002 (Figure 6.2; Gossett, 2010), and in Swaziland, where mortality among civil servants in 2001–2009 was highest at age 36–40 for men, and age 31–35 for women – the age brackets with the highest HIV prevalence (Haacker and Lule, 2012).

The implications of this increased mortality for the functioning of the state, however, are less clear. Deaths are only one of several causes of attrition from employment, and typically play a smaller role than resignations or retirement. In Botswana, for example, the contribution of deaths to overall attrition in the police and prison service between 1984–1995 and 1996–2005 (the period in which AIDS-related deaths in Botswana peaked) increased from 11 percent to 36 percent (Gossett (2010)). Nevertheless, overall attrition barely changed, and was actually somewhat lower in 1996–2005 (averaging 26.6 percent) than in 1984–1995 (average of 27.2 percent). For Botswana, Gossett (2010) states that “one cannot conclude that the prevalence of HIV/AIDS has yet led to a ‘hollowing out’ of the state”, and the subsequent decline in mortality (barely captured in this study) has plausibly ameliorated any adverse effects since. Similar observations on the mortality effects of HIV have been made for the education sector in Botswana (Bennell, 2005), or public servants overall in Swaziland (Haacker and Lule, 2012) and Malawi (UNDP, 2002).

Figure 6.2: Death and attrition rates in the Botswana police and prison services, 1984–2006



Source: Gossett (2010).

This finding may not carry over to other countries – the scale of the impact of HIV in Botswana was among the highest anywhere, scaling-up of treatment in the public sector occurred early and very comprehensively, and state capacities may have been relatively robust to start with. However, one lesson that applies generally is the need to place AIDS-related deaths in the context of attrition overall.

Productivity – evidence from company-level data

Company-level data show a steep decline in the productivity of workers living with HIV with failing health, and a strong recovery following initiation of treatment, but these data may not be representative for the impacts of HIV across the population.

The adverse impacts of HIV on employees have been documented in several studies based on company-level data. Drawing on company employment data (absenteeism, attrition and sometimes output), they are considered more precise than self-reported data.

The impact of HIV per se (before the introduction of antiretroviral therapy) has been documented for a sample of South African gold miners by Sonnenberg and others (2011). Absences for HIV-positive workers increased by about 2 percent of total working time following infection, largely on account of higher sick leave. This effect likely reflects health-seeking behaviour, as this is a sample of workers who know their HIV status, and would not be representative for HIV-positive people who do not. The adverse effects escalate only in the penultimate and final year preceding death, when the effect on absenteeism increases to 4 percent and 19 percent, respectively. In a rural community in Uganda, HIV-positive people not on treatment and with a CD4 count

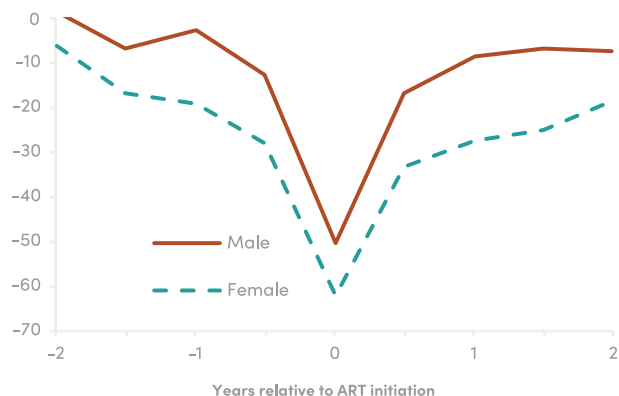
below 200 (an indication of advanced HIV disease) worked 7 days less per month than those with a CD4 count above 500 (Thirumurthy et al., 2013).

One of the best-known studies focuses on the impacts of HIV – and treatment – on tea pluckers in Kenya, covering not only absenteeism but also productivity, around treatment initiation (Larson et al., 2013). The data show a steep decline in working days in the year preceding treatment initiation, and an even steeper decline in the amount harvested, commencing earlier. Thus for this population, declining productivity on the job is an issue, exacerbating the effects of increased absenteeism (Figure 6.3). Following treatment initiation, the loss in working days is reduced to just 1–2 days per month (Figure 6.3). The recovery in output appears less complete (especially for women), but reflects in part that some employees are shifted to less physically demanding tasks (Figure 6.4). For the macroeconomic interpretation, it is important to note that while treatment improves workers' daily and monthly productivity, much of the treatment gains reflect longer survival rather than improved productivity of people living with HIV, i.e., the workers receiving treatment would have died otherwise (Habyarimana et al., 2010).

Figure 6.3: Productivity loss in days working per month (days)



Figure 6.4: Loss in kilograms harvested per month (percent)



Source: Haacker (2016), adapted from Larson et al. (2013).

French et al. (2019), in a study of South African coal miners in 2009–2017, extend this literature to the era of comprehensive access to treatment, and treatment initiation at much earlier stages of disease progression than previously. For individuals initiating treatment earlier (above a CD4 count of 200), attrition (including deaths, but also other causes like

retirement and separations for medical and other reasons) is reduced from 23 percent to 17–18 percent over a 4-year period. Absenteeism before treatment initiation is 8 percent lower if treatment is initiated above a CD4 count of 200, and 14 (or 20) percent lower following treatment initiation at a CD4 count of 200–350 (or above 350), all compared with treatment initiation below a CD4 count of 200.

Productivity and employment – evidence from patient or population data

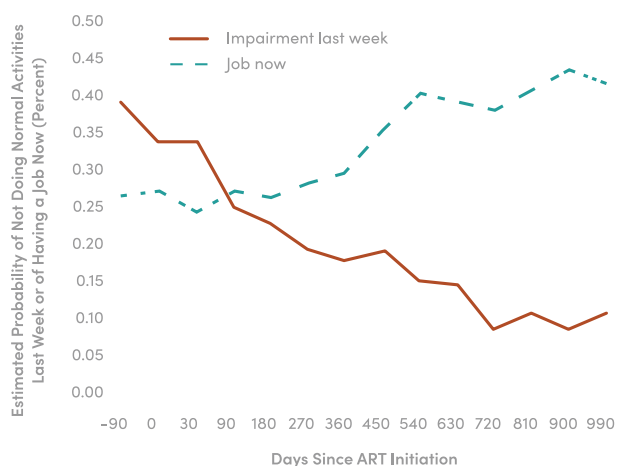
HIV results in steep losses of productivity and employment at late stages of disease progression. Treatment has been effective in improving health and – very gradually – employment.

While company-level data may offer precise measures of aspects of the productivity impacts of HIV, they are not representative, since they concern specific populations and occupations and do not capture important aspects of the labour-market impacts of HIV, e.g., a potential return to (any) employment enabled by treatment.

The impacts of treatment on employment outcomes have

been documented in a number of studies tracking patients shortly before and after treatment initiation. The findings by Rosen et al. (2010) are typical. For a sample of South African patients receiving antiretroviral therapy, there was a rapid improvement in health status (from 40 percent reporting health impairments to just 10 percent) and a recovery in the employment rate (from 25 percent to about 40 percent) over the two years following treatment initiation (Figure 6.5). According to Bor et al. (2012), the employment loss escalated over the 1½ years before treatment initiation, followed by a slow but eventually nearly full recovery over 3–4 years (Figure 6.6).

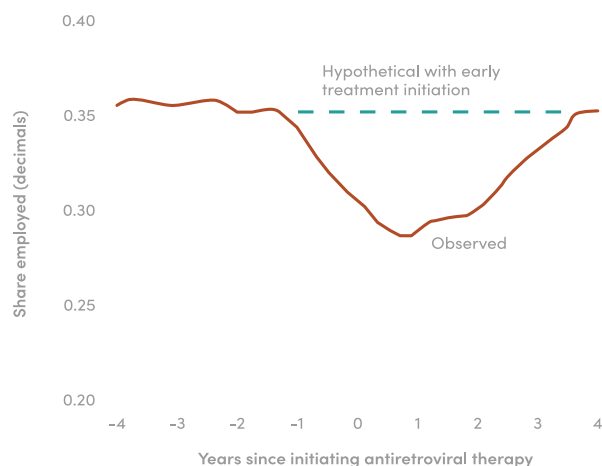
Figure 6.5: Antiretroviral therapy, employment and impairment



Source: Rosen and others, 2010

The slow recovery in employment – in a context of high unemployment overall – illustrates the role of the labour market in shaping the employment effects of HIV. Indeed, Booyesen & Geldenhuys (2016) show that labour-market participation (being employed or seeking a job) recovers quickly following treatment initiation, but that patients find new jobs only very slowly. This factor is common among both HIV-positive people receiving treatment and HIV-negative job seekers. According to Bor et al. (2012), the median duration of unemployment following a job loss for HIV-positive people on treatment is 3.7 years, close to the median duration of 3.3 years for an HIV-negative control group.

Figure 6.6: Employment trend among HIV patients receiving antiretroviral therapy



Source: Bor and others (2012).

Notes: The "observed" curve is from Bor et al. (2012); the curve for "early treatment initiation" is a hypothetical addition for our discussion.

The effects of HIV on the productivity and employment of people living with HIV are compounded by effects on members of their households. While the quantitative evidence is weaker than for the effects on people living with HIV, several studies show that caregiving family members must take time off work, so that caregiving erodes the economy's productive capacities (Heymann 2007; Rajaraman et al., 2008). In addition, caregiving or lack of resources affect children's access to education, with adverse effects on human capital in the longer run (see brief #4).

These empirical studies were all conducted during a period when treatment was initiated relatively late, once patients

were already severely sick, but they also offer insights into the economic implications of early treatment initiation. Because the employment loss typically occurred within about a year before treatment initiation, and expanded treatment eligibility is associated with earlier treatment initiation, it is plausible that the ongoing expansion of treatment removes a major source of economic hardship for people living with HIV – health-related employment loss often followed by years of unemployment irrespective of improved health following treatment initiation (Figure 6.6, “hypothetical” curve). At the same time, the measured productivity effects of treatment (observed when treatment is initiated very late) are diminished. Looking ahead, the productivity effects of long-term treatment (which may be small but extend over long periods), the interactions of HIV and HIV treatment with other diseases, and the effectiveness of different drugs to mitigate such adverse effects become more important (Haacker et al., 2019).

While patient-level studies provide important insights into the improvements in health and economic outcomes associated with treatment, they are subject to two shortcomings: they may not capture impacts of HIV before the escalation of adverse health effects at a late stage of disease progression, and the sample may not be representative of the population as a whole. In both regards, Levinsohn et al. (2013) provide an important addition, studying employment effects of HIV in a nationally representative sample for South Africa. Controlling for other factors, they show that HIV has been associated with an increase of 6–7 percent in the probability of being unemployed. This effect is concentrated among less-educated individuals, where the employment rate was about 10–11 percent lower.

Some of the negative employment effects of HIV are plausibly reversed by the scaling-up of treatment. The effects of HIV programmes, though, may extend well beyond patients and households affected by HIV, because the programmes also create employment directly. Such effects are illustrated from a macroeconomic perspective by Wagner et al. (2015), pointing to employment gains in countries receiving support from PEPFAR (the U.S. President’s Emergency Plan for AIDS Relief), and attributing them not only to health gains, but also to the effects of PEPFAR spending (accounting for about 6 percent of GDP in 10 PEPFAR focus countries). However, the statistical power of their analysis is relatively weak, as it relies on comparison between 10 PEPFAR focus countries and 11 control countries and offers no direct evidence on how HIV spending may affect employment.

Evidence on the localised effects of HIV treatment offers more insights into how HIV may affect employment. Wilson (2020) finds that local introduction of antiretroviral therapy increased employment by 8 percentage points among people living with HIV in Zambia. McLaren et al. (2019) provide estimates of the effects of introducing treatment in rural South Africa, not only on people living with HIV but also on the population not directly affected by HIV. They estimate that employment has increased by 8.5 percentage points for people living with HIV living close to antiretroviral therapy clinics, and that it has improved by nearly as much (6.3 percentage points) for people not affected by HIV in the same vicinity. They attribute these general employment effects to increased demand for labour, either directly through employment generated by the clinics, or through an expectation of reduced labour costs in the area.

Summing up

In summary, the adverse impacts of HIV on productivity and employment have been documented in numerous studies, predominantly based on data on patients initiating and continuing treatment. However, our understanding of the economic repercussions of HIV in this area is limited, for at least two reasons. First, the bulk of the published evidence regards South Africa, and the focus has been on the formal sector (through use of company data, or a focus on formal employment). These findings may not travel well across

countries, nor apply to the informal sector, i.e., where the bulk of adults in many countries work (Thomas et al., 2019).

Second, the macroeconomic implications of reduced employment among people living with HIV are unclear – to what extent does this reflect a distributional effect (i.e., HIV-negative people benefiting from employment losses among people living with HIV) or an aggregate employment effect (with HIV-related health and employment losses resulting in lower employment overall)?

Summary table: Implications of HIV for productivity and employment

Impact	Macroeconomic implications	Impact of HIV response
Erosion of state capacities through increased mortality among public servants.	State dysfunctions increase the cost of doing business and undermine sustainable development.	Early concerns on state erosion have not obviously materialised. Reduced mortality owing to treatment would have further mitigated any effects.
Loss of productivity among people living with HIV, concentrated at late stage of disease progression.	Loss in average productivity. However, empirical evidence is employment- and sector-specific, and may not apply across economy.	Treatment results in reversal in productivity losses among people living with HIV, but main effect of treatment is increased survival.
Employment loss among people living with HIV.	Employment loss contributes to adverse economic effects on people living with HIV. However, effect on aggregate unemployment unclear, as employment losses among people living with HIV may be offset by employment gains by others.	Treatment initiation is followed by slow recovery in employment. Early initiation of treatment may prevent employment loss altogether.

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