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# AIDS and economic growth: A human capital approach

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## Abstract

Using a model that combines growth and health capital equations this study analyses the impact of HIV/AIDS on economic growth. The econometric results indicate that the epidemic's effects have been substantial; in Africa the marginal impact on income per capita of a 1% increase in HIV prevalence rate is minus 0.59%. Even in countries with lower HIV prevalence rates the marginal impacts are non-trivial. Hence while the human and social costs of the HIV/AIDS epidemic are major causes for concern, these results indicate that the macroeconomic affects of the HIV/AIDS epidemic are important.

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## 1. Introduction

“Twenty years after the first clinical evidence of acquired immunodeficiency syndrome was reported, AIDS has become the most devastating disease humankind has ever faced. Since the epidemic began, more than 60 million people have been

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infected with the virus. HIV/AIDS is now the leading cause of death in sub-Saharan Africa. Worldwide it is the fourth-biggest killer.” (UNAIDS/WHO, 2001).

It is estimated that in 2003 about 5 million more people acquired the HIV virus and that more than 3 million people died from AIDS<sup>1</sup> bringing total deaths from the epidemic to more than 25 million (UNAIDS, 2003). While the highest prevalence and death rates and number of infected persons are reported for sub-Saharan Africa, there is evidence that the epidemic is accelerating in Asia and Eastern Europe and that complacency is causing an upturn in prevalence in North America and Western Europe. Wherever the epidemic strikes it imposes severe human and social consequences. Family life is severely disrupted as adults are rendered less able and/or unable to work, health care costs rise and children are forced prematurely onto the labour market and/or made orphans. These human and social consequences of the epidemic, especially in sub-Saharan Africa, are increasingly visible as the media devotes resources to covering the epidemic. Over and above these consequences are the economic costs of the epidemic. These include immediate costs, such as increased health care expenditures and reduced labour productivity, and long-term costs, such as reduced levels of education, health, physical and social capital.

Since few economists would doubt the potential of the AIDS epidemic to create substantial economic costs, it is surprising that there have been relatively few studies into the economic, especially the macroeconomic, implications of the epidemic (see below).<sup>2</sup> In part this is probably a reflection of the limited recognition given to the impact of health upon macroeconomic performance and the relatively recent availability of data that allow systematic econometric evaluations of the epidemic. The results reported in this paper are based upon an augmented Solow model that incorporates both health and education capital. Importantly, the model is estimated as a system wherein health capital is partially determined by health status, in particular the prevalence of HIV infection, using panel data. The next section briefly reviews the literature on HIV/AIDS and development. Section 3 summarises the derivation of the growth and health capital equations, and comments on the panel data methods. Section 4 starts with a discussion of the available data and how they influence the specification of the estimating equations, and then reports the results. The results are discussed in Section 5 and the final section contains concluding comments.

## 2. HIV/AIDS and development

Empirical analyses of the macroeconomic impact of the epidemic have been based largely upon standard neoclassical growth models. In the context of these models the epidemic would be expected to reduce productive efficiency, and hence output per worker,

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<sup>1</sup> Of the 37.8 million people estimated to be living with HIV at the end of 2003 17 million were women and 2.1 million were children under 15 (UNAIDS, 2004). The proportions of women and children infected in sub-Saharan Africa are greater.

<sup>2</sup> The UK Parliament’s House of Commons International Development Committee recently commented on the lack of information about the macroeconomic impact of HIV/AIDS (International Development Committee, 2001).

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