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**MACROECONOMIC EFFECTS OF HIV AND AIDS:
EMPIRICAL EVIDENCE FROM SUB-SAHARAN
AFRICA**



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UUM
Universiti Utara Malaysia

**DOCTOR OF PHILOSOPHY
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EVIDENCE FROM SUB-SAHARAN AFRICA**

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**Thesis Submitted to
School of Economics, Finance and Banking,
Universiti Utara Malaysia,
in Fulfilment of the Requirement for the Degree of Doctor of Philosophy**

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ABSTRACT

A review of previous studies on the macroeconomic effect of HIV/AIDS suggests that the effect of HIV infection after it has converted to AIDS has not been considered in empirical studies. Realising that HIV is associated with rising morbidity and AIDS is associated with rising mortality and morbidity, this study considered both in the macroeconomic analysis. Both the HIV and AIDS could have important and different consequences on the macroeconomic performance of national economies. This study investigates the effects of HIV prevalence rate and AIDS on economic growth and aggregate labour productivity in sub-Saharan Africa. It also evaluated the impact of health expenditure on HIV prevalence rate. The sensitivity of the results was examined within two alternative sub-samples – Eastern and Southern Africa (ESA) and the Rest of sub-Saharan Africa (RSA). Panel data from 42 countries for the year 1990-2013 were used. The study estimated an empirical growth equation within an augmented Solow model and applied the dynamic system generalised method of moment estimator. HIV prevalence rate was found to have significant negative effects on GDP per capita growth and aggregate labour productivity in both the full sample and the two sub-samples. The effects did not differ between the sub-samples. AIDS was found to have positive influence on GDP per capita in all the samples. It also positively influences aggregate labour productivity measured by GDP per person employed in all samples but RSA. This is however, not beneficial to both economic growth and aggregate labour productivity. Rather, it is detrimental as it was attributable to decrease in populations and total employment instead of economic growth. There was no evidence that health expenditure has a significant negative effect on HIV prevalence rate in either the full sample or any of the sub-samples. Policy makers should ensure that adequate resources are committed towards preventing people from acquiring new HIV infection as well as averting the disease to convert to AIDS. Health awareness should also be promoted through education for better population health status.

Keywords: HIV prevalence rate, AIDS, GDP per capita growth, aggregate labour productivity, health expenditure

ABSTRAK

Ulasan karya lepas berkenaan kesan HIV/AIDS terhadap makroekonomi menunjukkan ketiadaan kajian empirikal yang dilakukan dalam menganggar kesan AIDS selepas jangkitan HIV. Menyedari bahawa HIV dikaitkan dengan peningkatan morbiditi manakala AIDS dikaitkan dengan kematian dan morbiditi yang semakin meningkat, maka kajian ini menganalisis kesan kedua-duanya terhadap makroekonomi. HIV dan AIDS memberi implikasi penting dan berbeza kepada pencapaian makroekonomi sesebuah negara. Kajian ini menganggarkan kesan kadar kelaziman HIV dan AIDS terhadap pertumbuhan ekonomi dan produktiviti agregat buruh di sub-Sahara Afrika. Ia juga menilai kesan perbelanjaan kesihatan terhadap kelaziman HIV. Kepekaan keputusan diuji dalam dua alternatif sub-sampel-Timur dan Selatan Afrika (ESA) dan lain-lain negara di sub-Sahara Afrika (RSA). Panel data dari 42 negara bagi tahun 1990-2013 telah digunakan. Kajian ini menganggarkan persamaan pertumbuhan empirikal berasakan model Solow yang diperkukuh dan menggunakan sistem penganggar GMM yang dinamik. Kadar kelaziman HIV didapati mempunyai kesan negatif yang ketara terhadap pertumbuhan KDNK per kapita dan produktiviti agregat buruh dalam sampel penuh dan dua sub-sampel. Kesan tersebut adalah tidak berbeza antara sub-sampel. AIDS turut memberi kesan positif terhadap agregat produktiviti buruh yang diukur menggunakan KDNK per kapita individu bekerja dalam semua sampel kecuali RSA. Walau bagaimanapun, ia tidak membawa kebaikan kepada pertumbuhan ekonomi dan agregat produktiviti buruh. Sebaliknya, ia boleh memudaratkan kerana ia menyumbang kepada penurunan populasi dan jumlah guna tenaga dan bukannya pertumbuhan ekonomi. Tidak dapat dibuktikan bahawa perbelanjaan kesihatan mempunyai kesan negatif yang ketara terhadap kadar kelaziman HIV sama ada dalam sampel penuh atau sub-sampel. Pembuat dasar perlu komited dalam memastikan sumber adalah mencukupi dalam mencegah jangkitan HIV serta mengelak penyakit ini menukar kepada AIDS. Kesedaran terhadap kesihatan perlu diterap melalui pendidikan bagi meningkatkan tahap kesihatan populasi.

Kata kunci: kadar kelaziman HIV, AIDS, pertumbuhan KDNK per kapita, agregat produktiviti buruh, perbelanjaan kesihatan

DECLARATION

Some part of the work presented in this thesis has been published as articles in the following journal:

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GLOSSARY

AIDS	Acquired Immune-deficiency Syndrome
CDC	Centres for Disease Control and Prevention
ESA	Eastern and Southern Africa
GDP	Gross Domestic Product
GMM	Generalized Method of Moments
GNI	Gross National Income
HAART	Highly Active Antiretroviral Therapy
HIV	Human Immune-deficiency Virus
H_0	Null Hypothesis
IMF	International Monetary Fund
MMWR	Morbidity and Mortality Weekly Report
OLS	Ordinary Least Squares
R1	Regression One
R2	Regression Two
RSA	Rest of Sub-Saharan Africa
SSA	Sub-Saharan Africa
TB	Tuberculosis
UNAIDS	Joint United Nations Programme on HIV/AIDS
UNDP	United Nations Development Programme
UNPD	United Nation Population Division
US	United States
UUM	Universiti Utara Malaysia
WHO	World Health Organisation

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

Health which is central to individual's well-being is among the basic objectives of growth and development. Therefore, enhancing the health status of the vast majority of the populace, especially in developing countries that are prone to diseases is not only an end in itself, but also a means to achieve other ends – poverty reduction, better living standards and consequently macroeconomic development (Todaro & Smith, 2005). Essentially, health is a fundamental component of economic growth. That is, it is an important input in the form of human capital in the aggregate production function and a prerequisite for raising productivity. In essence, the health status of individuals and societies determined the vigour with which they pursue productive activities. All other human positions, status or material wealth are regarded second to individuals or societal health (Bhargava, Jamison, Lau, & Murray, 2001).

Health influences society's output directly or indirectly. Directly, healthy workers are more energetic and robust, that is, can endure a longer period of work and have a clear mental reasoning, hence capable of augmenting the level of output. Indirectly, improvement in health is an incentive to education and learning process of children, because healthier children have higher cognitive ability. Better education received means more efficiency and higher productivity which implies more income and economic growth. Greater health also means lower morbidity; hence people can increase their savings for investment purposes rather than spending the money on

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