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# TRENDS IN LIFE EXPECTANCY AND THE MACROECONOMY IN MALAWI

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## ABSTRACT

This study examines trends in life expectancy in Malawi since independence and offer possible explanations regarding its inter-temporal variations. Descriptive analysis has shown that life expectancy in Malawi has trailed below Sub Saharan Africa's average. From the 1960s through early 1980s, life expectancy improved due to rising incomes and absence of HIV/AIDS. After early 1980s life expectancy declined tremendously and never improved due to the spread of HIV/AIDS, the economic slump that followed the World Bank's Structural Adjustment programmes (SAP) and the widespread corruption and poor governance in the era of democracy. It is found that at the turn of the new millennium, Malawians were no healthier than their ancestors at the dawn of independence, though such a trend somehow started changing for the better after 2004. In order to meet her health Millennium Development Goals by 2015, Malawi needs to put good governance, agricultural performance and increases in health expenditure at the heart of development policies.

**Keywords:** life expectancy, GDP, HIV/AIDS, Malawi

**JEL Classifications:** I12, I18, O11, H51

## INTRODUCTION

Life expectancy in Malawi has declined substantially since the late 1980s and yet there have not been any major studies on the topic despite its importance. Studying life expectancy trends is important since not only is it an end in itself, it is also a means to some important societal goals.

Fayissa & Gutema (2005) among others have argued that good population health acts as an important option towards achieving improved human welfare, but it is also a desirable end in itself. The importance of understanding the context specific aggregate determinants of population health and factors that affect them is actually crucial for the reduction of any future decline in life expectancy and in some cases may be very instrumental in the design of policies that would have trickledown effects on the healthy sector which would in turn enhance national development through a healthy labour force.

A health labour force is a precondition for economic growth and any country that needs to achieve sustained growth in the long run must be wary of any macroeconomic factors that hinder attainment of high life expectancies. The success of East Asian Tigers has been partly attributed to a health labour force. The causality from health to economic growth does not mean absence of a relationship from economic growth to health. Incomes do affect health through access to health care and better sanitation as money is necessary to buy items related to sanitation; through improved nutrition which needs money to be realized, and through its impact on mental health (see Sapolsky, 1994).

Internationally, literature does show that the second half of the twentieth century has been characterised by improving life expectancy in many countries. It shows that developing countries have added 22 years between 1960 and 1995 to their life expectancy while developed countries have added about 8 years (WHO CMH, 2001). Had this general trend reached Malawi, life expectancy by the 1990s would have been around 60 years. It seems though that this has not been the case.

Literature also indicates that improvements in longevity in the 19<sup>th</sup> century were mainly driven by improvements in nutrition, largely as a result of higher incomes and not merely by advances in medicine or public health (Mackeown, 1976 and Fogel, 1994). Such findings bring to the attention of researchers and policymakers that population health is multifaceted. It is driven by incomes as well as advances in medicine implying that any bid to study life expectancies should consider such factors at the very least.

The relationship between life expectancy and incomes should of course be interpreted with caution. In the first place, findings from some studies have suggested that whether incomes will always influence health depends on the levels of income in subject and the nature of its distribution. Some studies have shown disparities in life expectancy among nations with equal incomes per capita. For instance, at a GNP per capita of \$600, life expectancy is 69 years in Honduras, whereas it is 51 years in Senegal (Subramanian, et al, 2002). Moreover, some countries with higher incomes per capita, such as some oil producing countries have experienced lower life expectancies. Indeed in line with this, Preston, (1980) and Easterlin, (1999) have found evidence in shifts in the health production function mainly due to distribution issues than to mere rises in incomes per capita.

In the past few decades, research has focussed more on the importance of microeconomic variables in determining life expectancy of individuals but few rigorous studies that we know of have concentrated on relating the aggregated variables at the macroeconomic level to life expectancy. Nevertheless, studies of macroeconomic determinants of health are equally important as knowledge of which macroeconomic variables need attention in the pursuit for longer life spans would be instrumental for national healthy policy and long run development. Life expectancy being an aggregated index of the number of years a new born baby would be expected to live if the prevailing factors and mortality patterns at the time of birth were to stay the same is an aggregate measure of population health and would possibly be influenced by other national level aggregated variables.

Malawi remains one of the many developing countries where life expectancy is very low, underscoring the importance of any efforts to garner sufficient knowledge about how high life expectancy levels could be achieved. The national Statistics Office (NSO), (2004) reported as low as 36 years for male and 39 for females. Such low expectancy figures should be a cause for alarm considering the importance of longevity to development. Moreover, children born in one of the very rich countries would live significantly longer, and in some cases double this life span. It becomes natural in the wake of such massive differences in life expectancy to ask questions about the determinants of such variations in life expectancy within nations over time.

This study purports to descriptively study the trend of life expectancy between 1960 and 2003 and further examine any association between life expectancy and health and economic policy.

## METHODS

To examine life expectancy trends, data from International Financial Statistics and World Bank's world development indicators are descriptively analysed. Data on Gross Domestic Product (PPP) and life expectancy from 1960-2003 are partitioned into half decadal averages and graphs are produced and interpretations given. Data on total health expenditure per capita is also used in the analysis to show the co-movement between GDP per capita, life expectancy and expenditure on health over time. Data on health expenditure however covers only 10 years (1996-2005). This short series is still important as it may act as an eye opener on the relationship between the series since 1996.

In this study, focus is placed on the role national incomes and aggregate expenditure on health. Macroeconomic stabilization policies are thought to affect health indirectly through GDP growth. It is thought that it is important to include expenditure data in line with Sen, (1999), who argued about the importance of considering development beyond GDP per capita growth alone.

For purposes of clarity, growth rates of the GDP per capita and life expectancy are calculated every half decade and the results are also presented in graphs. This has an advantage of explicitly showing the pattern of decline in the said variables and further renders an opportunity for comparison of the series. Pearson correlation coefficients are also presented to help support the study's findings.

## RESULTS

The next few paragraphs present results in form of graphs and tables. Pearson correlation coefficients are also reported and interpretation given.

Figure 1 Life expectancy over time in Malawi

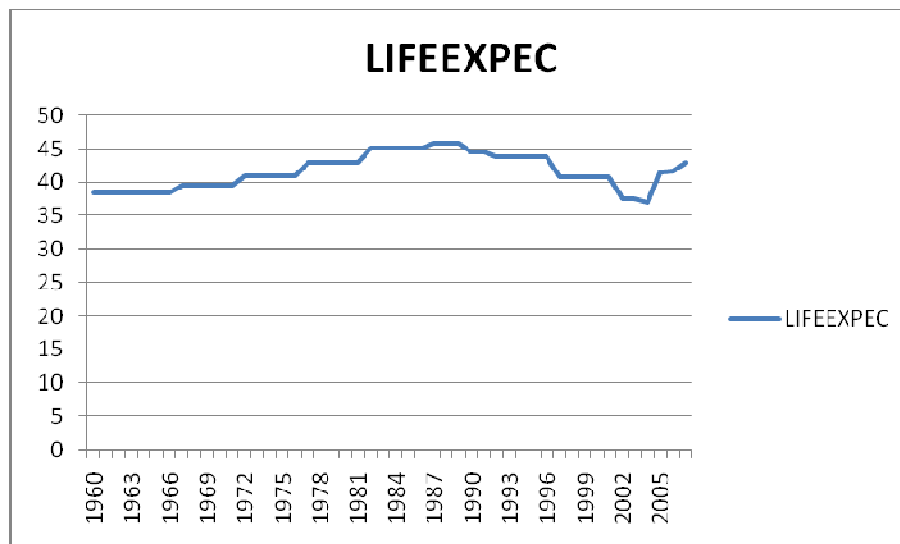
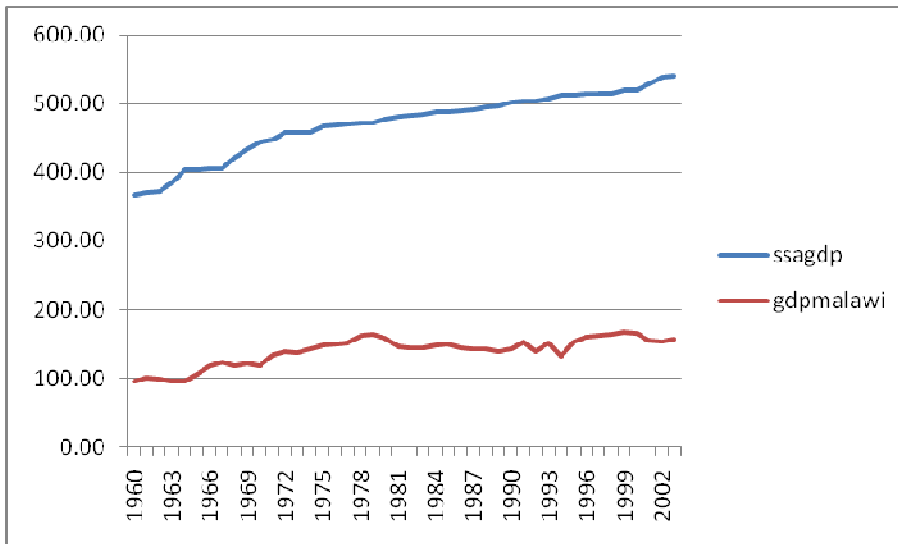


Figure 1 above shows that between 1960 and 1989 life expectancy in Malawi improved steadily from around 38 years to 45 years. Life expectancy started declining sharply from 1990 and by 2003 it had fallen below the 1960 value of around 38 years to 37 years. The

downward trend however seems to have changed for the better since 2004 and by 2007, the national expected life expectancy stood at around 41 years.

Figure 2 GDP over time for Sub Saharan Africa and Malawi



Further, Figure 2 above shows that in general Malawi's economy has trailed behind that of an average African country (national income per capita for Malawi (lower curve) and Sub Saharan Africa (the upper curve)). The GDP for Malawi is everywhere below the average of that of sister nations.

Figure 3 Life expectancy for Africa and Malawi (1960-2003)

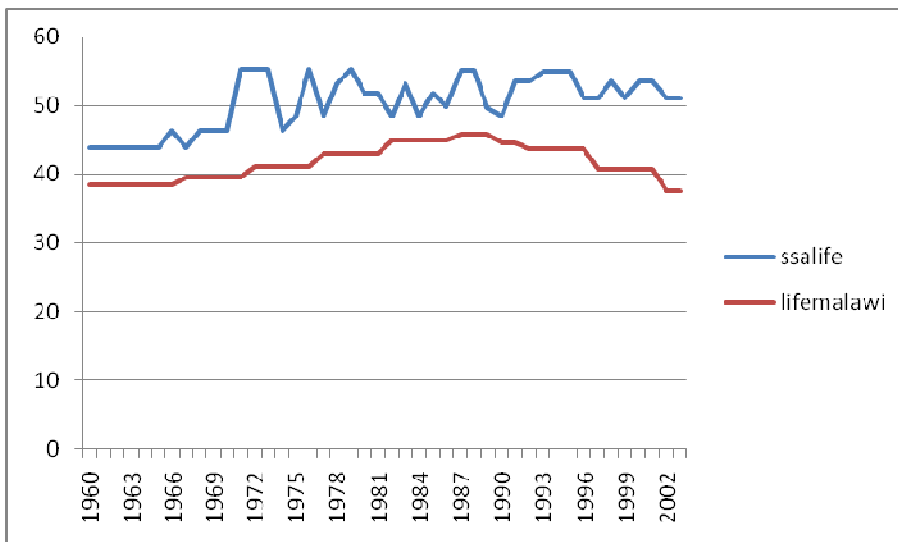


Figure 3 above shows trends in life expectancy for Malawi (lower curve) and for Sub-Saharan Africa (SSA) from 1960 to 2003. Malawians seem to have lived shorter than an average African.

Table 1 Half decadal averages in life expectancy and other variables

decade	Life expectancy	GDP\$ (ppp)/capita
60-64	38.43	98.05
65-69	39.31	120.43
70-74	40.69	140.30
75-79	42.58	156.91
80-84	44.62	146.72
85-89	45.426	142.42
90-94	43.954	145.99
95-99	41.318	163.91
00-04	38.60	155.06
05-07	40.77	163.43

Table 1 above shows half-decadal averages of life expectancy and GDP per capita. Life expectancy deteriorated in the first part of 2000s but started improving after 2004 as seen from the 2005 to 2007 average. The patterns in the variables are best explained in the graphs that follow.

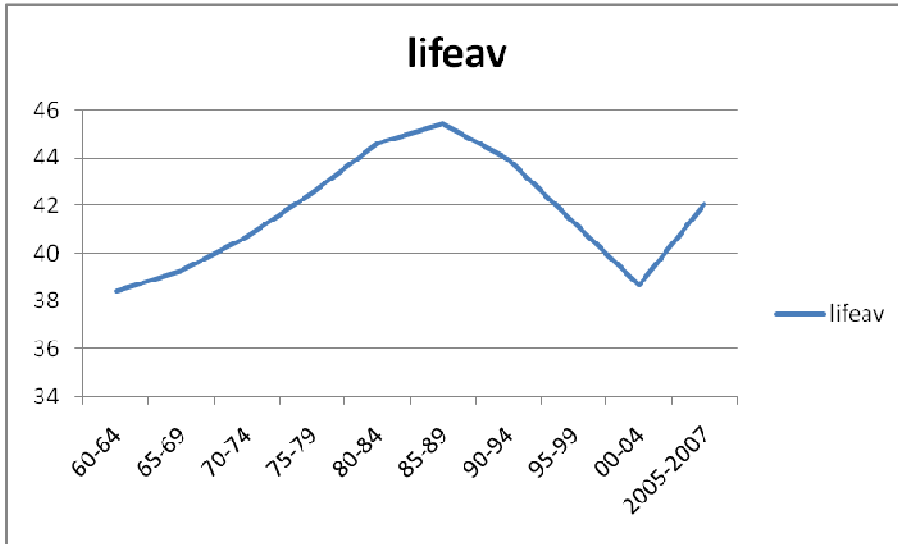
Table 2 Correlations

		Life Expectancy	Total health expenditure/capita	Gdp
Life Expectancy	Pearson Correlation	1	.321	.498**
	Sig. (2-tailed)		.367	.001
	N	44	10	44
Total health expenditure/capita	Pearson Correlation	.321	1	.551
	Sig. (2-tailed)	.367		.098
	N	10	10	10
Gdp/capita	Pearson Correlation	.498**	.551	1
	Sig. (2-tailed)	.001	.098	
	N	44	10	44

\*\* . Correlation is significant at the 0.01 level (2-tailed).

Table 2 above shows bivariate correlations between life expectancy, incomes per capita and per capita expenditure on health. It is shown that life expectancy is positively and significantly correlated with incomes per capita. While health expenditure per capita is positively correlated with life expectancy, the coefficient is not statistically significant at the recognized levels of .01, 0.05 or 0.1.

Figure 4 Half decadal averages in life expectancy



The figure 4 above shows that life expectancy in Malawi did increase steadily between 1960 and 1989 and that thereafter it decreased until 2003 forming an inverted u-shape. Indeed by 2003 Malawians were no healthier than their ancestors on their Independence Day. Part of this trend in life expectancy could be explained by the trend in nation HIV/AIDS prevalence at the national level as shown in the Figure 5 which confirms that over the same period HIV/AIDS prevalence increased almost exponentially between the 1980s and around 1994. The graph in figure 4 further shows that after 2004, life expectancy started improving again.

Figure 5 Adult HIV prevalence (15-49 years)

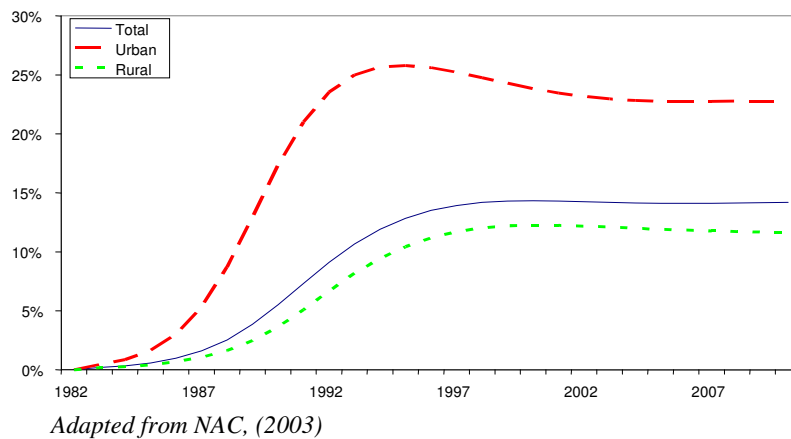
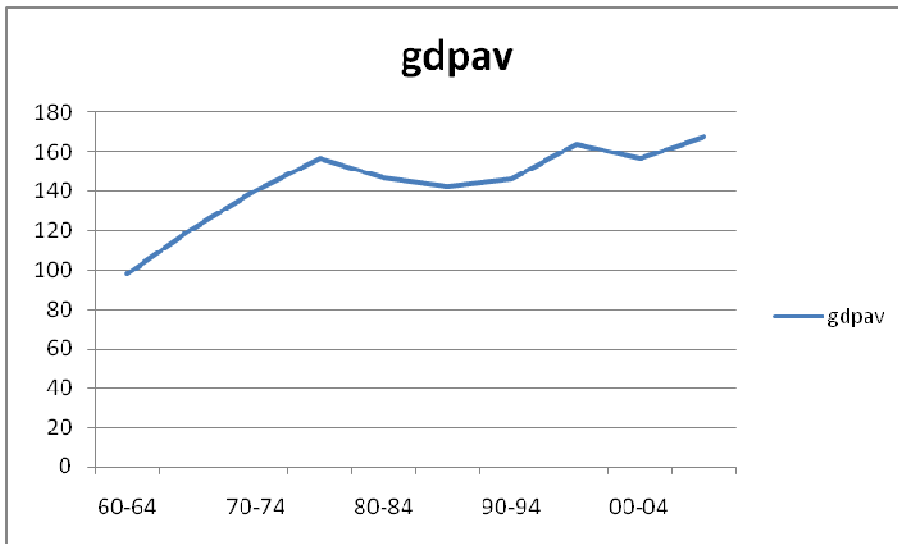


Figure 5 shows that national HIV/AIDS prevalence among the adults (15-49 years) increased at an alarming rate between the 1980s and the late 1990s. After 1997 the prevalence has been almost constant.

Life expectancy in Malawi has generally been lower since Malawi attained its independence. But under Dr Hastings Kamuzu Banda life expectancy was generally increasing throughout most of his rule until early 1990's when it started plummeting. Life expectancy figures reached their highest point of around 45 years in early 1990s and thereafter it started going down and between 2001 and 2003 it hit the low mark of 37 years. So within a decade (1990-2003) an average Malawian lost almost 8 years from his/her expected life.

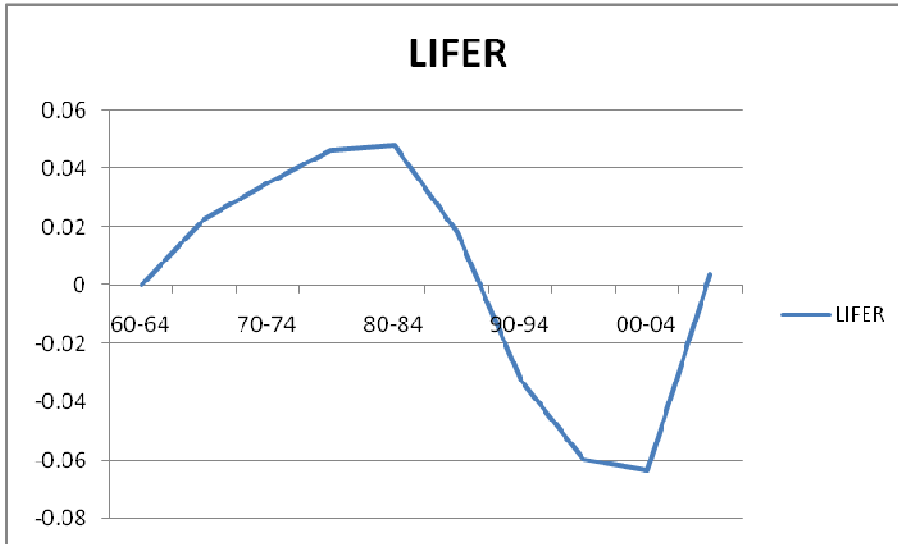
Figure 6 Half decadal averages in GDP (PPP)



The graph above shows half decadal averages of GDP and shows clearly the steadily rising GDP between 1960 and 1979 and then a slump between 1980 and 1989.

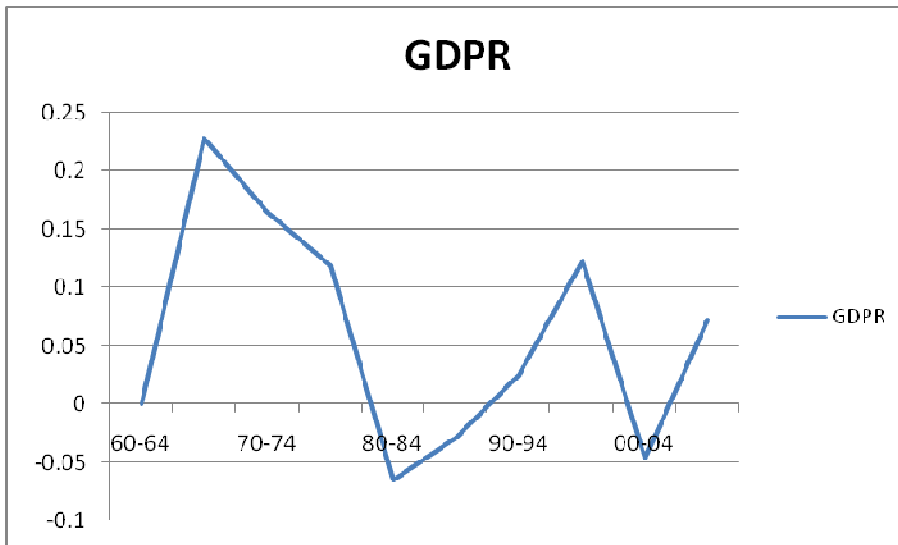
Figure 7 Growth of life expectancy





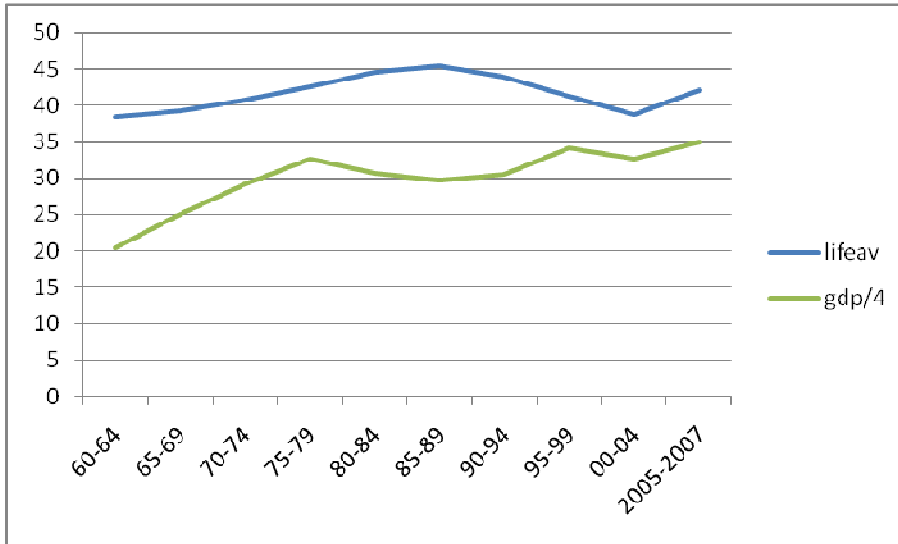
The growth rates in life expectancy as can be seen above did increase and remained positive between 1960 and 1990. Between 1990-2003 life expectancy growth rates plummeted pathetically and remained negative.

Figure 8 Half decadal growth rates in national incomes



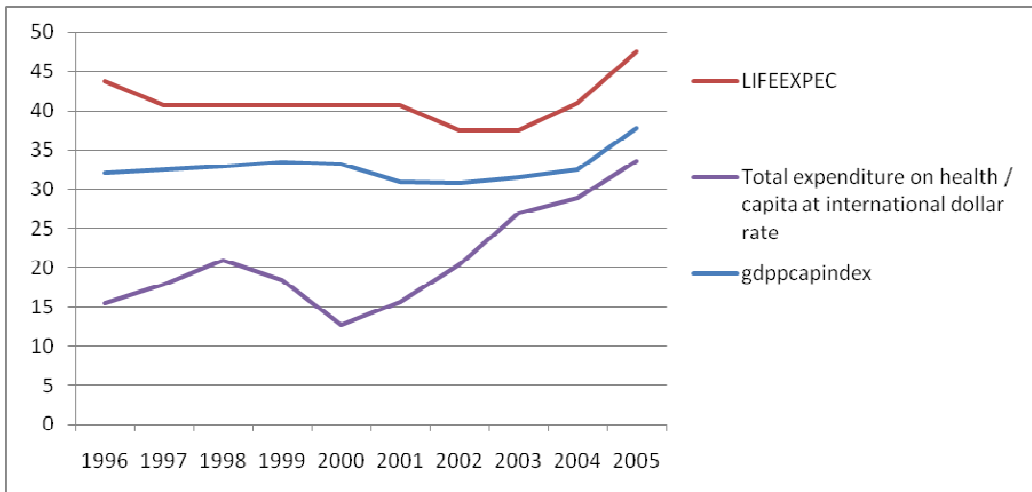
The figure 8 above shows that growth rates of GDP have generally been increasing and decreasing. The largest shrinkage occurred between 1980 and 1989- a decade of structural adjustment programmes.

Figure 9 GDP per capita and life expectancy (GDP scaled down by 1/4)



The graph above shows to some extent the relationship between GDP (the bottom curve) and life expectancy (the upper curve). To make variations in both series conspicuous and ease comparability, GDP per capita has been scaled down by 4. This figure suggests that past economic success was preceded by success in life expectancy especially between 1960 and 1980. It seems that a few years after the economic slump after 1980, life expectancy also took a downward trend. These cannot be taken just as two separate issues well placed in time. Income had an impact on health.

Figure 10 Life expectancy GDP/capita and health expenditure per capita



It can be seen from the figure that there was some co-movement between life expectancy (the top most curve) and GDP per capita (the curve in the middle) supporting the findings from the Pearson correlation coefficients that there is a non-ignorable relationship between the two variables. The positive (though insignificant) correlation coefficients from Table 2 are also confirmed by the trend of health expenditure per capita (the curve at the bottom) and life expectancy between 1996 and 2007.

## DISCUSION

This study has shown that at the dawn of independence Dr Banda inherited a people whose life expectancy was very low but somehow under his rule life expectancy did improve from 37 years in 1960 to 45 years by 1989. After 1989 the health index declined until 2004 when it started showing some signs of improvements. This paper argues that the association between the said variables cannot be considered as a rare chance in time but rather life expectancy did improve in part due to the health and economic policies of the time.

Specifically, this paper has found that income per capita did influence the variations in life expectancy. This finding supports the findings of Deaton, (2003) and Wilkinson, (1992) who argues that though there may be a two-way causality between GDP and health, incomes still do influence health such that at lower incomes the relationship is stronger than otherwise. One argument for the low but rising life expectancy during Dr H Banda would be explained by the fact that, under his period the country had a controlled economy with a highly subsidized agricultural sector until 1980s. Dr Banda's regime emphasized more on agriculture such that he used to tell people '*chuma chili mthaka*' meaning (*land is wealth*) (Thomas, 1974). Such emphasis on agriculture was well placed in time and meant his policies directly ameliorated any nutritional problems in the rural areas which were characterized by low hospital to population ratio. Good nutrition following successful agricultural production one way or another reduced rural death rates and increased probability of living longer. Indeed it can be seen from the graphs of half decadal GDP performance over time that the period when life expectancies did improve was also associated with increasing incomes per capita.

It seems from the performance of life expectancy between 1960 and 1989 that though Banda's rule was one of totalitarian, his agricultural, health and macroeconomic stabilization policies did shield many poor people from external shocks and food deprivation resulting to increased life expectancies.

Soon after reaching its peak of 45 years in 1989, life expectancy started declining and has always done so, reaching a mark of 37 years by 2003. Life expectancy-wise, Malawians have been taken back to where Dr Banda started. Between 1980 and 2003 three events important to population health took place. Firstly, the early 1980s Dr Banda's government started implementing the painful economic reforms, the Structural Adjustment Programmes (SAP) imposed by the World Bank. Under the SAP arrangement, his government was to open up (liberalize) its markets and so stopped subsidizing agriculture which unfortunately was a means to agricultural and therefore economic success. It also reduced funding to health sector as most of the budget was to finance debt repayment (WHO, 1999). Secondly, the mid 1980 saw the first case of the virulent and incurable HIV/AIDS virus being reported in Malawi (USAID, 2006). Thirdly, just soon after the turn of the 1990s and indeed in the last days of Dr Banda, by way of referendum, Malawians accepted multiparty democracy.

The life expectancy growth rate graph shows that in the 1980s, life expectancy started increasing but at a decreasing rate and worsened in the 1990s. The possible explanation of this turn of events is that the SAP did compromise people's capabilities to earn a health life through decreased rates of agricultural and income growth. Furthermore, HIV/AIDS towards the 1990 started claiming many lives and in the absence of any proportionate increase in health initiatives, declining incomes and HIV/AIDS helped bolster the decline in life expectancy. And, since the first case was reported in the 1980s, HIV/AIDS pandemic has continued to take a devastating toll of manpower and currently affects 14.1% of the population (USAID, 2006) translating to around 1.7 million victims. The economic decline from between 1980 and 1989 is evident from the half decadal average incomes per capita graph. The period 1980 to 1989 saw declining and then rising incomes by 1989 thereby creating a trough.

It is worth noting that by 1994 Malawi became a democratic government under the leadership of Bakili Muluzi. Unfortunately the United Democratic Front government under Bakili Muluzi that came with democracy became marred by rampant corruption, financial mismanagement and moral erosion resulting into widespread and deepening poverty (Trocare, 2006). The improvements the economy had gained 10 years after SAPs were introduced started getting lost as we entered the democratic era under Bakili Muluzi. Much as there was an increase in donor inflows that time, the downward trend of life expectancy was never reversed.

Many would argue that under democracy, things should have changed. Indeed under Muluzi's democracy, the government saw many health initiatives being introduced. In the mid 1990s, considering that Tuberculosis (TB) was among the killer diseases in Malawi, the National TB control Program (NTP) was launched and since then it has implemented the Directly Observed Therapy, Short course (DOTS) (USAID, 2006). By 2002, the Malawi TB-HIV technical team started implementing a three year plan for the joint TB-HIV/AIDS services consistent with World Health Organization/UNAIDS recommendations. There have also been several anti-malaria projects by Population Services International among others. The National Aids Commission has spent billions of kwacha to finance various health programmes.

So both the private sector, Non-Governmental Organizations and the Government have pulled up their socks in the fight against disease and the burden that comes with it. Unfortunately, though the Expanded Program on Immunization (EPI) that was piloted in 1976 with support from WHO and United Nations Children's Fund (UNICEF) has led to a decline in childhood mortality (see GAVI, 2005), as measured by life expectancy index population health does not seem to have improved but has deteriorated even further casting doubt as to whether initiatives do address real problems. Moreover about 52000 new cases of TB are still reported every year by the World Health Organization, 14.1% of the adult population (age 15-49 years) has the HIV virus, and malaria continues to infect a large part of the population. Infant mortality rate stands at 104 per 1,000 live births, and the under-five mortality rate stands at 188 per 1,000 live births. The maternal mortality rate is high and stood at 984 per 100, 000 in 2004 (Malawi National Statistics Office, 2004).

The possible explanation for this continued decline in health sub indicators despite many initiatives under Muluzi can be found in the nature of his leadership. Under him the emphasis on agriculture was a thing of the past and his era saw the collapse of Agricultural Development and Marketing Corporation and deteriorating agricultural prices. Banditry increased and by 1999 economic growth slowed down. As aforesaid, corruption characterized his reign so that though his government formed the Anti Corruption Bureau (ACB) the body was just seen as a grinding edge for opposition politicians other than a real fighter of corruption. Under such conditions health service delivery became compromised.

Expenditure on health has been shown to be positively correlated with life expectancy though the relationship in this study's dataset was not statistically significant. The absence of a strong relationship might be due to the shorter length of the health expenditure series or indeed it might point to the efficacy of different health financing systems (Sector Wide Approaches versus alternatives) on actual population health but this is better left for future studies. The emergency human resource programs that are being implemented in the country could also have further positive impact on overall population health but the data herein does not allow the study to explore such a relationship.

At present, it seems the Bingu wa Mutharika's government has embraced the pro-poor policies that characterised a good part of Dr Banda's. The agricultural sector has seen

increases in fertilizer subsidies and an increase in food production. There is also an attempt to which corruption out of the bureaucratic system all of which, coupled with relatively macroeconomic prudence, have yielded somewhat higher economic growth and some gleam of hope on life expectancy.

## CONCLUSION

This study has found results that suggest that life expectancy improvement in the 1960s through the 80s and the subsequent decline from the 1990s may be attributable to changes in the agricultural policy, political governance, health policy, and the scourge of HIV/AIDS.

The results suggest that in order to improve population health the government should put in place good policies that would not only generate economic growth also increase expenditure on health as this would have a positive impact on life expectancy. Indeed if the country is to meet its health Millennium Development Goals by 2015 of the government should further come up with policies that would encourage health professionals of today to stay in and work in the country alongside. It should further uphold macroeconomic prudence through macroeconomic stabilization policies and it should endeavour to end corruption

Future research should seek possibilities of exploring the same relationship using microeconomic data and age specific life expectancy while incorporating illiteracy levels and staffing levels in the health sector, the Emergency Human Resource Programme effects data, explicitly. Time series analysis techniques may also help shade more light on the nature of the causes of life expectancy decline. For example one may seek to examine how exchange rates have directly influenced mortality or how aid and the means of funding have affected the life expectancy index. Since the shorter series of health expenditure per capita does not show an explicit statistically significant influence on life expectancy, there could be a case of different forms of funding and studies on the Sector Wide Approaches to funding versus their alternatives could be worthwhile.

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