

# **Health, Poverty and Poverty Dynamics in Africa**

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## 1. Introduction

The importance of linkages between poverty and ill-health have long been recognised<sup>1</sup>. Until recently the primary analytical focus for social scientists has been on examining the relationships between income (or consumption) poverty and key indicators of health status, such as mortality, morbidity and nutrition. However, the pressure for ‘multidimensional’ and ‘people centred’ understandings of poverty, fueled by the work of Sen (1984), has critiqued such utilitarian measures of poverty and welfare and encouraged a focus on individual capabilities (the means which enable people to function) and more nuanced conceptualisations of poverty. From such perspectives, preventable deaths and ill-health are not merely outcomes of poverty but integral components of poverty itself. Such conceptualisations are reflected in the increasing use of broader measures such as the UNDP’s human development index (HDI) and human poverty index (HPI) that incorporate health indicators in their computation.

The Millennium Development Goals (MDGs), which are so central to contemporary policy and action to reduce poverty, place a considerable emphasis on improving health. Three of the eight goals (reducing infant mortality, reducing maternal mortality and tackling AIDS, malaria, TB and other diseases) directly focus on health.<sup>2</sup> Similarly, rights based approaches to development conceptualise life and health as a fundamental right by positing access to basic health services as something that should be guaranteed for all of humanity.

While broadening the analysis and measurement of poverty and well being to recognise the influence of health, and health care, is clearly progress such progress should not be exaggerated. The work of many health specialists (doctors, nutritionists, medical researchers) still concentrates on the proximate determinants of health and disease susceptibility (i.e. genetic factors) and pays little attention to income poverty, social inequality, vulnerability and the distal determinants of health. Conversely, in many economic and social studies health and ill health appear as an ‘add on’ or idiosyncratic factor, rather than a central analytical component. Interestingly, poor people do not separate out health from other aspects of poverty. As a Ugandan woman reported, ‘I am poor because I have nothing in my house; no husband, no blanket, no cooking utensils. I have to beg for food. I can’t pay fees for my child. Besides, I am always sick’ (Lwanga-Ntale and McClean 2004:184).

In this paper we investigate the linkages between health (and especially ill-health) and other aspects of poverty, in an African context, and specifically through an African Case Study. Our underlying premise is that health, or ill-health, is central to the understanding of income and capability poverty, while income and capability poverty is central to the understanding of health. This is a two way relationship. Millions of people are income poor because of health problems and lack of access to basic health services while income poverty means that millions of people suffer health problems that are easily preventable and cannot access health services (Chronic Poverty Research Centre 2004).

As an introduction, the conference paper it is structured as follows. Section two outlines the broad background explaining the interconnected natures of health and poverty before providing

an economic, and African, focus of such a relationship. In the penultimate section we provide an African case study, for Uganda, looking at the impact of ill health on poverty dynamics (chronic and transient poverty). Section five concludes.

## 2. The Interconnected Nature of Health, Well Being and Poverty

Nussbaum (2000) argues that there is a cross-cultural consensus on a number of basic capabilities and central to her listing are life and health. While there are heated debates about what constitutes development or social progress, on the basis of available evidence, it is likely that most people, cultures and societies would probably agree with Nussbaum, that longer lives, the avoidance of preventable deaths, healthier lives and reduced mortality for their children are among the capabilities we all have reason to value (see Clark, 2002; Moore et al., 1998; Narayan et al., 2000; Wilson and Ramphela, 1989). Through a different set of arguments, Doyal and Gough (1991) identify 'health' as one of the two 'basic human needs' (along with autonomy).

In the post-world war 2 decades it appeared that this aspiration for better health would be automatically realised in most countries as people could expect to live longer and be healthier than their parents. However, since the 1980s and particularly over the 1990s trends have reversed in a significant number of countries and the assumption that aggregate health status will improve everywhere, but at different rates, appears invalid. While the HIV/AIDS pandemic is an important factor in understanding downturns in life expectancy, survival rates and morbidity, it is far from being the only factor. In Central Asia infant and child mortality rates are increasing; in 22 sub-Saharan African countries under 5-mortality has worsened (see examples in Table 1); stunting is rising in many African countries and has improved little in South Asia despite economic growth (World Bank 2004:134). In many African countries, and the Russian Federation, average life expectancy has dropped by several years over the last decade (Tables 2 and 4 in McKay's IV Mediterranean conference paper further highlights some of the serious health deficiencies facing some African countries). Explaining these reversals demands analyses that move well beyond health and demographic factors.

**Table 1: Setbacks: Child Mortality (per 1,000 live births)**

Country	1990	2002	Change
<b>Worst Performers</b>			
<b>Iraq</b>	50	125	75
<b>Botswana</b>	58	110	52
<b>Zimbabwe</b>	80	123	43
<b>Swaziland</b>	110	149	39
<b>Cameroon</b>	139	166	27
<b>Kenya</b>	97	122	25

Source: [http://hdr.undp.org/docs/statistics/indices/stat\\_feature\\_1.pdf](http://hdr.undp.org/docs/statistics/indices/stat_feature_1.pdf), 2004

While it has long been known that people in poorer countries generally experience poorer health levels than people in richer countries it is also becoming clearer that within most societies health status varies greatly. In particular, the poorest almost always experience higher morbidity levels, die younger (on average) and experience higher levels of child and maternal mortality. For example, in the Central African Republic the infant and under-5 mortality rate for the assets

poorest quintile of the population is always more than twice that of the richest quintile (World Bank 2004:20).

At both a macro level (cross-national and national) and micro level (individual, household, community) studies demonstrate that the causality between poverty and ill health is bi-directional. For example, Wagstaff (2002:97) shows that in a household where the head or main income earner is sick, this has a subsequent impact on the income and welfare of the household, sometimes to the extent of moving the household below the income poverty line. Furthermore ill health is associated with additional or increased health care costs. Conversely, income and capability poverty also cause ill health. Individuals living in low income countries tend to have worse health outcomes on average, than those living in higher income countries. In high income countries, only six children out of every 1000 born die before their fifth birthday. In the developing world the figure is 88, and in the world's poorest countries the figure reaches 120 (ibid). At the micro level the detailed processes that make ill health both a cause and a consequence of ill health have been identified in qualitative studies. These include the shocks of terminal illness (Hulme 2004) and the gradual but continuous stresses of exploitative work that undermines health status and income earning capacity (Begum, Hulme and Sen, 2004, forthcoming).

Such processes and interactions have been particularly accentuated in Sub-Saharan Africa, where high prevalence levels of HIV/AIDS (see Table 2 below), have particularly debilitating effects on millions of families and their ability to accumulate assets, reduce vulnerability and/or escape poverty. HIV/AIDS, in particular, damages family coping mechanisms and as individuals in the most productive age range are most at risk, it is particularly harmful to the income generation potential of families.

**Table 2: HIV Prevalence by Region**

	<b>HIV prevalence (% ages 15-49) 2003</b>
<b>All developing countries</b>	1.2 [1.1 - 1.4]
<b>Least developed countries</b>	3.2 [2.9 - 3.8]
<b>Arab States</b>	0.3 [0.1 - 0.5]
<b>East Asia and the Pacific</b>	0.2 [0.2 - 0.3]
<b>Latin America and the Caribbean</b>	0.7 [0.5 - 0.9]
<b>South Asia</b>	0.6 [0.3 - 1.0]
<b>Sub-Saharan Africa</b>	7.6 [7.0 - 8.4]
<b>Central and Eastern Europe and the CIS</b>	0.6 [0.4 - 0.9]

Source: [http://hdr.undp.org/statistics/data/indic/indic\\_69\\_1\\_1.html](http://hdr.undp.org/statistics/data/indic/indic_69_1_1.html), 2004

With an estimated 40 million people worldwide infected with HIV, 2.5 million, of whom are children, HIV/AIDS holds centre stage in contemporary debates and action about poverty and health status interlinkages for many reasons. Of particular importance is the fact that it does not merely impact on present day lives and livelihoods but has effects on the well being and health of future generations. It can be transmitted inter-generationally (from mother to child) and creates an economic and social legacy (low rates of economic growth, asset depletion, weakened institutions) that limits the prospects of future generations. But, there are other problems that

have similar implications for future generations and thus demand attention. Most obvious amongst these are poor nutrition (which limits lifecourse capabilities and income prospects and has implications for offspring capabilities and income prospects)<sup>3</sup> and lack of access to basic health services. To break these intergenerational cycles of poverty and ill health means reducing the incidence of illness and removing the barriers that the poor face in obtaining access to food and to health services.

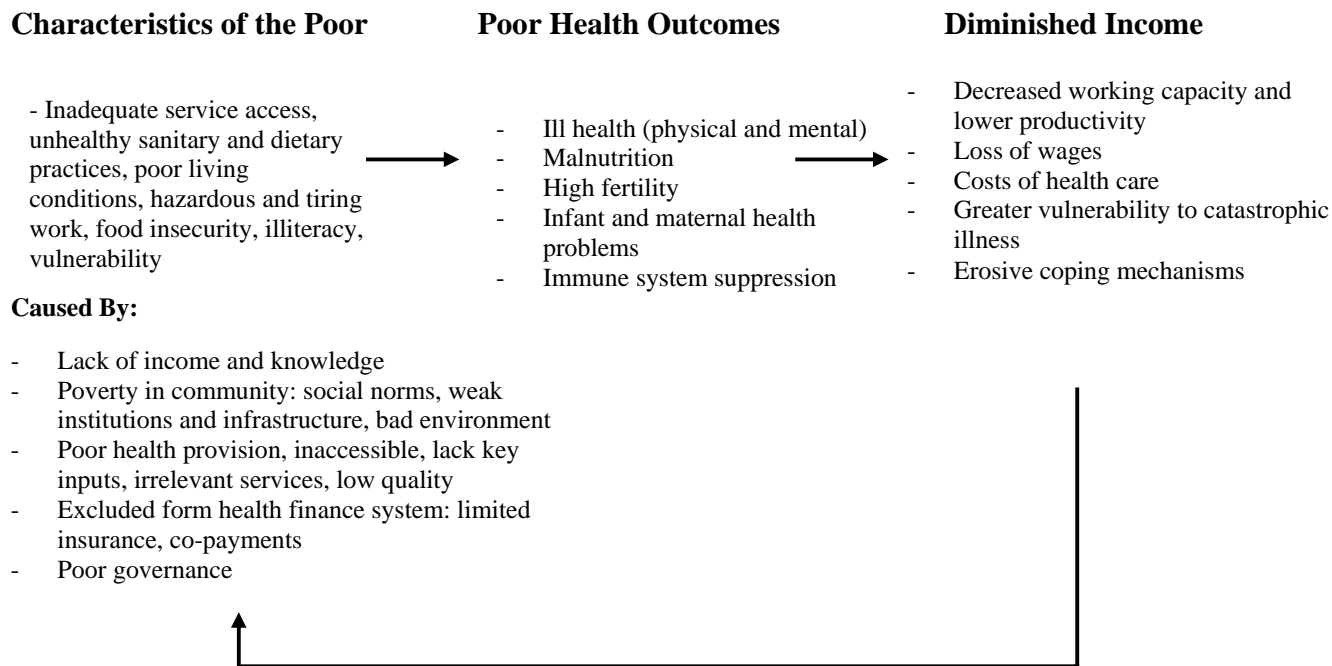
Kyegombe (2003) identifies five main dimensions through which aspects of health/ill health interact with other components of poverty, to which we add a sixth.

1. *Income poverty, nutrition and health:* income and asset poverty raise the probability of poor nutrition and associated ill health; poor nutrition, immune system suppression and reduced ability to fight disease lower productivity and income; and, ill health raises the requirement for and reduces the effective utilisation of food thus further lowering productivity and/or increasing expenditure on food (Osmani 2000:281)
2. *Shelter and health:* income and asset poor households generally have poor quality housing, water and sanitation which increases their morbidity. Particular problems are diarrhoeal diseases (faeces, dirty water) and respiratory diseases (cooking fires and lack of ventilation). Crowded rooms increase the likelihood of diseases being spread throughout a household. Conversely, households with sickly people have to reduce their expenditure, reduce the quality of their shelter (e.g. sell off roofing iron) or move to poorer accommodation.
3. *Work environments and health:* income and asset poor households have to take work where they can get it and often this means next to roadsides, in unventilated factories, with hazardous machinery or chemicals and without health and safety protection. This raises morbidity and mortality probabilities. Conversely, work related accidents and ill health reduce productivity and income.
4. *Income poverty and health care costs:* income and asset poverty means that the poor are the least able to purchase good quality health services. Associated with this, the poor generally have lower levels of education and their social networks cannot provide high levels of 'information' about the quality of health services. As a result, the 'value for money' of the health services they acquire is often low. This means that they experience more ill health, thus further lowering their income and requiring that they sell off productive assets.
5. *Ill health and erosive livelihood strategies:* ill health often leads to the pursuit of strategies that deplete assets (withdrawal of children from school, sale of land) or increase vulnerability (taking hazardous or degenerative jobs, moving into sex work or taking on unserviceable debts).
6. *Coping with vulnerability to ill health:* individuals and households who expect to experience high levels of ill health and/or mortality may respond by not pursuing long-term investments (eg orchards or irrigation) or savings.<sup>4</sup>

The interactions of the factors discussed above are summarised in Figure 1. Poverty and ill health interact creating a basis for vicious cycles in which households or gradually slide (through stresses or repeated minor shocks) or rapidly fall (through catastrophic shocks) into declining

health status, lowering incomes and assets, chronic poverty and, possibly, destitution or premature death.

**Figure 1: Health and Poverty Interactions**



(Adapted from Wagstaff 2002).

### 3. The Economic Understanding of Health, Poverty and Poverty Dynamics

The economic analysis of health and well being has tended to focus on health and health expenditure as an input or means of achieving economic growth through its productivity effects. From such a perspective there is much evidence showing that a healthy population is an engine for economic growth, with health being a major cornerstone of economic development at a macro level and essential to ensure people can achieve a more economically productive life, at a micro level (Bloom and Canning 2001: 8). The classical view of the relationship between health and economic development, that wealth leads to health with improving health an output of the growth process, is supported by a broad correlation between average GDP and life expectancy, at the national level. However, the causal link running from wealth to health cannot be fully explained (Bloom and Canning 2001:8).<sup>5</sup> Health contributes directly to economic growth in four main ways: it reduces production losses caused by worker illness; it permits the use of natural resources that has been totally or nearly inaccessible because of disease; it increases the enrollment of children in school and makes them better able to learn; and it frees for alternative uses resources that would otherwise have to be spent on treating illnesses (World Bank 1993:17).

From a microeconomic perspective an individual's health status may be considered important not only because of the direct utility health can provide but because of the productivity losses and large indirect costs, caused by ill-health, which places demands on already stretched health systems and family support networks (Strauss et al. 1998). Furthermore, such effects can have a huge impact on the income and asset status of households and therefore influence income poverty measures. Table 2 in McKay's conference paper further highlights some of the serious health deficiencies facing some African countries.

When analysing the intricacies between health and well being/poverty, one main method at the micro level, is to use household data. However, this immediately raises several obstacles in the desire to add value to our understanding, especially in the context of developing countries where reliable household data, which is nationally representative, is quite rare. Not only are we dependent upon reliable cross section data, but panel data is also required if we are to understand the dynamics associated with health and wellbeing, such data is even more scarce.

Despite this there are an increasing number of developing countries for which relatively rich quantitative household data is becoming available. For example, Uganda has three reliable national household surveys, and several waves of panel data. However, other usable household datasets are available in countries such as Ethiopia and South Africa and several other African countries. One of the major advantage associated with this type of data is that analysis of dynamics can be undertaken and we can establish, for example, what proportion of households are persistently below the poverty line (chronically poor) or transiently poor (move into or out of the poverty). As can be seen from Table 3, usage of such panel data has established that in several countries a fairly large proportion of households are persistently poor, and significant proportions, move in to poverty. Although, comparison across countries, is extremely difficult, it would appear that such trends are not SSA specific.

**Table 3: Poverty Dynamics: Chronic and Transient Poverty**

	<b>Headcount Poverty (yr)</b>	<b>Chronic Poor</b>	<b>Moving Out of Poverty</b>	<b>Moving Into Poverty</b>	<b>Never Poor</b>
<b>Africa</b>					
Uganda	35% (1999)	18.9%	29.7%	10.4%	41.0%
Ethiopia (Urban)	42.9% (1997)	30.6%	9.8%	12.4%	47.2%
South Africa	41.8% (1998)	22.3%	11.4%	19.3%	47.0%
Egypt	26.5% (1997)	19.0%	6.3%	14.1%	60.6%
Madagascar (Urban)	77.3% (1999)	70.2%	9.9%	6.7%	13.2%
<b>Selected Non African Countries</b>					
Bangladesh (Rural)	43.6% (2000)	31.4%	25.8%	17.7%	25.1%
Vietnam	33.5% (1998)	28.7%	27.4%	4.7%	39.2%

#### **4. An African Case Study of Health and Poverty Dynamics - UGANDA**

Uganda's dramatic poverty reduction of the 1990's has been well documented, with poverty levels falling from 56% in 1992 to 35% in 1999.<sup>6</sup> However, and despite this excellent progress, approximately 20% of households are persistently poor (Table 4) and there are substantial proportions of households that have moved into and out of poverty (Okidi and McKay 2003). From a qualitative perspective in particular, ill health has been identified as a major cause of such poverty. For example, Uganda's Participatory Poverty Assessment Process (UPPAP) indicated that over 37% of communities thought ill health was a major cause of moving into poverty (Republic of Uganda 2002). Despite this however, and considering that Uganda is relative rich in household data, it is perhaps surprising that there has been little quantitative investigation which both tests the aforementioned qualitative findings and establishes the extent to which ill health influences poverty persistence and transitions, relative to other factors.

For Uganda in particular, knowing the impact of ill health on poverty is especially important. Firstly, for most of the last two decades the government has based government economics reforms around creating an environment for economic agents to exploit by using their endowment of capabilities – health is obviously a major component of this. Furthermore, and secondly, the importance of understanding such a relationship is accentuated when considering that Uganda was at the centre of Africa's AIDS pandemic in the 1980's and early 1990's when incidence levels of HIV/AIDS peaked at more than 25%. Although incidence levels have now fallen to less than 7% (2003), morbidity levels have increased from 17% (1992) to 28% (2002) (Republic of Uganda 2003).<sup>7</sup>

Intuitively, and considering the interconnected nature of health and poverty, such high levels of sickness are likely to have an impact on the capacity of households to escape poverty, and may even move households below the poverty line (Wagstaff 2002). However ill health, and especially HIV/AIDS, also have other implications such as damaging traditional social support networks and increasing health care costs, all of which make breaking out of the cycle of poverty and ill health even more difficult.

Using household panel data for 1992-99 this section of the paper fills a void in the health and poverty research arena, providing a rare investigation into the direct link between ill health and chronic and transient poverty, and on income growth. Considering the complex interconnected nature of health and poverty we not only control for the endogeneity issues between health and poverty but also investigate how ill health may impact on important factors such as asset depletion, which in turn has consequences for poverty dynamics. This enables us to also draw some tentative insights regarding household coping mechanisms. Furthermore, and considering the history of HIV/AIDS in Uganda we differentiate between long and short term sickness and establish how serious illnesses, such as HIV/AIDS might differ in the impact on poverty status, compared to less serious illnesses.

##### Poverty Trends

Using a sub sample of the household surveys, the 1992/99 two wave household panel, we find 48.6% of these households were poor at the beginning of the period, and this had fallen to 29.3% by the end. As can be seen in the first row of Table 4 (& Table 3) we find that 18.9% of the panel households were chronically poor (poor in both years) while 41.7% were non-poor in both



periods. The remainder moved into or out of poverty between these years, so indicating substantial mobility: 29.4% of the panel households moved out of poverty, while 9.9% of the panel households slipped in.<sup>8</sup>

### Health Status

If we look at the influence of ill health on persistent and transient poverty, we can see from columns one and three of Table 4 that households with sick heads in 1992 comprise larger proportions of those chronically poor and moving into poverty.<sup>9</sup> The evidence suggests that disproportionate numbers of the chronically poor (moving into poverty) 21% (28.3%) are headed by individuals who were sick in 1992, compared to households moving out of poverty (15% were headed by sick individuals). Descriptive data for the ‘long term’ sick also indicate similar patterns.<sup>10</sup> More than 8% of households headed by an individual classified as ‘long term sick’ moved into poverty, compared to a 6.8% overall average.

**Table 4: Chronic and Transient Poverty By Health Status**

	<b>Chronic Poor</b>	<b>Moving out of Poverty</b>	<b>Moving in to Poverty</b>	<b>Never In Poverty</b>	<b>All</b>
	(1)	(2)	(3)	(4)	(5)
<b>Poverty Figures</b>					
Poverty Levels 1992-1999 Panel (All Households)	18.9%	29.5%	9.9%	41.7%	-
<b>Household Head Health Status</b> (by column)					
Proportion of households with head who has a long term sickness (>10 days), in 1992	6.84%	6.44%	8.08%	6.92%	6.87%
Proportion of households with head sick, in 1992 (by row)	21.8%	15.6%	28.3%	18.9%	17.9%
<b>Household Head Health Status</b> (by row)					
Proportion of households with head who has a long term sickness (>10 days), in 1992	18.8%	27.5%	11.6%	42.0%	-
Proportion of households with head sick, in 1992	15.0%	25.6%	15.6%	43.9%	-

Analysing health and poverty status by row also suggests that the initial health status of the household head and poverty level are potentially closely associated. In particular, column 3 shows that there is a disproportionately large number of sick headed households moving into poverty (15.6%) relative to the proportion of the total sample moving into poverty (9.9%). The reverse is true for moving out of poverty, with disproportionately low proportions of sick households (25.6%) relative to the sample average (29.4%).

The descriptive data is therefore suggestive of an association between the original health status of the household head and household moving into poverty, i.e. this is in line with intuitive suggestions that sickness can limit welfare enhancing opportunities. Perhaps surprisingly the linkage between original health status of the head and households staying in poverty appears less clear.

**Table 5: Household Head Health Status and Assets**

Asset Levels and Change	Chronic Poor		Moving out of Poverty		Moving into Poverty		Never In Poverty		Long Sickness Periods (> 10 days) (9)	All	
	Sick (1)	Not Sick (2)	Sick (3)	Not Sick (4)	Sick (5)	Not Sick (6)	Sick (7)	Not Sick (8)		Sick (10)	Not Sick (11)
<b>Land</b>											
Land Area at 1992	2.85	2.71	2.63	2.80	2.60	2.35	2.48	2.87	2.66	2.59	2.77
Land Area at 1999	3.81	3.21	3.88	5.36	3.00	2.27	3.46	5.18	3.94	3.54	4.59
% Increase in Land Area	33.7%	18.5%	47.5%	91.4%	15.4%	-3.4%	39.3%	80.5%	48.1%	36.7%	65.7%
<b>Chickens</b>											
Number of Chicken at 1992	1.96	1.87	1.61	1.57	1.64	1.16	1.73	1.73	1.30	1.72	1.66
Number of Chicken at 1999	2.44	2.93	2.63	5.41	1.10	1.75	3.21	4.80	2.26	2.62	4.34
% Increase in Chicken Numbers	24.5%	56.7%	63.6%	244.6%	-32.9%	50.5%	85.5%	177.5%	73.3%	52.3%	161.4%
<b>Cows</b>											
Number of Cows at 1992	0.41	0.91	1.17	0.99	1.39	0.89	1.27	0.98	0.93	1.13	0.97
Number of Cows at 1999	0.15	0.78	0.45	1.13	1.36	0.70	1.21	1.62	1.01	0.88	1.22
% Increase in Cows Numbers	-63.6%	-14.3%	-61.5%	14.0%	-2.4%	-20.6%	-4.7%	65.6%	9.4%	-22.1%	26.3%

Descriptive data (Table 5) also indicate that the levels of enterprise assets are also associated with poverty dynamics. Comparing healthy and non healthy headed households, column 11 indicates that not only are land areas smaller for the sick than non-sick (3.54 acres and 4.59 acres respectively) but land increases for the sick are almost half that of the non-sick (65.7% compared with 36.7% for the sick). Similar trends exist for other enterprise assets such as chickens and cows. For instance non-sick households have increases in the quantity of cows of 26%, compared to the decrease of 22% for sick households. Sick households moving into poverty experience chicken number decreases by up to one third compared to a 50% increase for the non sick. This suggests a depletion of assets during the process of immiseration.

However, investigated such interactions through an econometrics based approach also helps form a true picture of what is going on. In support of the descriptive data, results in Table 6 show that if a household head is sick as at 1992 then this is statistically significant in increasing the probability of households moving into poverty (by 3.5 percentage points) and significant in reducing the probability of never being poor (6.7 percentage points).<sup>11</sup> Although the results are not significant for the chronically poor, the direction of influence for the sickness variables is, reassuringly, of the expected positive direction.<sup>12</sup>

In addition, we also find that the association between households having a sick head in 1992. In addition, and as with the descriptive data, households headed by females who are ill face a higher probability of moving into poverty, than households headed by ill men.<sup>13</sup> In fact, households headed by women and suffering from (long term) sickness are up to (15) 7 percentage points more likely to fall into poverty than similarly defined male headed households (Appendix Table 7).

## **5. Conclusion**

Finally therefore, it has long been accepted that good health is a fundamental component of well being and that improved health contributes to economic growth (World Bank 1993:17) - in line with the 'wealthier are healthier' hypothesis proposed by Pritchett and Summers (1996). As the World Health Report expresses it, "Improvements in health are important in their own right, but better health is also a prerequisite and a major contributor to economic growth and social cohesion" (WHO 2003:27). Consequently, the Millennium Development Goals place health at the heart of development. Although the MDGs represent an excellent opportunity for promoting health outcomes for poor people, it seems certain they will not be met in many countries nor will they be met globally. For example, if progress continues at current rates, sub-Saharan Africa will not reach income poverty reduction and child mortality goals, until 2147 and 2165, respectively (UNDP 2003).<sup>14</sup>

However, any serious attempt to understand the issues of poverty or of ill health, and to reduce poverty or raise health status, must examine the dynamic linkages between poverty and ill health. Interventions that can interrupt or break the 'vicious circle' of poverty and ill health interactions, be they accessible health care, social protection or asset transfers, must be found and funded as a central component of poverty reduction. Understanding poverty-ill health linkages and the

impacts of specific forms of intervention is increasingly feasible as new datasets and improved econometric methods are available.

At least, in the context of our African example country of Uganda, a number of relationships that have been deduced by theory are shown to be empirically valid. In particular: income poverty is associated with higher levels of ill health; and long term sickness is also associated with poverty dynamics. It would appear that the ill health of a head of household has significant negative effects for the well-being of all other household members and is particularly associated with households moving into poverty. However, there appear to be quite distinct differences in coping mechanisms of the sick and non sick households during the process of immiseration, particularly in relation to assets and such issues deserve further investigation, possibly by using a combined quantitative and qualitative data investigation a more rounded understanding of the issues underlying the dynamics and interconnected nature of health and poverty, can occur.

**Table 6: Poverty Status - Multinomial Logit Marginal Effects 1992/99 Panel**

Variable	Not Poor (1)	Chronic Poverty (2)	Moving Out of Poverty (3)	Moving Into Poverty (4)
<b>Constant</b>	0.3954 (2.229)**	-0.2868 (-2.135)**	-0.0175 (-0.108)	-0.0912 (-1.145)
<b>Age of Head</b>	-0.0084 (-1.133)	0.0056 (1.008)	0.0023 (0.351)	0.0004 (0.124)
<b>Age of Head Squared</b>	0.0001 (1.036)	-0.0001 (-1.096)	0.0000 (-0.169)	0.0000 (-0.152)
<b>Female Household Head</b>	-0.0198 (-0.301)	0.0356 (0.658)	-0.0184 (-0.3)	0.0026 (0.087)
<b>Household Size</b>	-0.0213 (-2.803)***	0.0161 (3.386)***	0.0056 (0.865)	-0.0005 (-0.127)
<b>Head Was sick in 1992</b>	-0.0659 (-1.975)**	0.1223 (1.472)	-0.0921 (-1.371)	0.0357 (2.186)**
<b>Dependency rate</b>	-0.1493 (-1.592)	0.0823 (1.156)	0.0228 (0.262)	0.0441 (1.077)
<b>Education</b>				
Primary	0.0240 (2.877)***	-0.0076 (-1.482)	-0.0203 (-2.649)***	0.0039 (1.267)
Secondary	0.0389 (2.255)**	-0.0287 (-2.02)**	0.0111 (0.676)	-0.0213 (-2.313)**
Spouse Primary	0.0226 (2.632)***	-0.0200 (-3.501)***	-0.0009 (-0.112)	-0.0017 (-0.542)
<b>Assets</b>				
Land	0.0075 (0.632)	0.0021 (0.239)	0.0045 (0.408)	-0.0141 (-2.558)**
Chickens	0.0033 (0.401)	0.0084 (1.454)	-0.0030 (-0.388)	-0.0087 (-2.089)**
Cows	0.0146 (1.737)*	-0.0158 (-2.354)**	0.0027 (0.324)	-0.0015 (-0.356)
<b>Region</b>				
Urban Central	0.0858 (1.004)	-0.0171 (-0.239)	-0.0012 (-0.015)	-0.0675 (-1.201)
Rural Central	-0.0313 (-0.682)	-0.0027 (-0.078)	0.0409 (0.941)	-0.0069 (-0.309)
Rural East	-0.1491 (-2.847)***	0.0314 (0.855)	0.1053 (2.255)**	0.0124 (0.534)
Urban East	-0.0260 (-0.233)	0.0094 (0.099)	0.0816 (0.772)	-0.0650 (-0.847)
Urban West	0.1265 (1.174)	-0.1251 (-1.152)	0.0546 (0.529)	-0.0560 (-0.753)
Urban North	-0.0536 (-0.467)	-0.0042 (-0.046)	0.0657 (0.621)	-0.0079 (-0.132)
Rural North	-0.3528 (-4.699)***	0.2349 (5.817)***	0.0489 (0.766)	0.0690 (2.675)***
<b>Type of Work</b>				
Agricultural Own Account	-0.0428 (-0.824)	0.0394 (0.966)	-0.0072 (-0.149)	0.0106 (0.424)
Agricultural Wage	-0.0179 (-0.146)	0.0537 (0.593)	0.0313 (0.276)	-0.0671 (-0.874)
Other	-0.1182 (-1.171)	0.0868 (1.216)	0.0205 (0.231)	0.0109 (0.241)
Non Agricultural Own Account	0.1919 (2.531)**	0.0129 (0.204)	-0.1275 (-1.647)*	-0.0901 (-1.734)*
<b>Change Variables</b>				
Change in Household Size	-0.0047 (-0.615)	0.0142 (2.942)***	-0.0212 (-2.896)***	0.0117 (4.146)***
Change number of 5 year olds	-0.0130 (-0.301)	-0.0306 (-1.103)	0.0366 (0.974)	0.0070 (0.349)
Change number of 6-14 year olds	0.0209 (0.499)	-0.0165 (-0.614)	-0.0126 (-0.348)	0.0082 (0.422)
Change number work aged	0.0061 (0.152)	-0.0208 (-0.796)	0.0133 (0.375)	0.0014 (0.074)

\* Significant at 10% level

\*\* Significant at 5% level

\*\*\* Significant at 1% level

Defaults – Missed Education (for head and spouse), Urban West, Non Agricultural Wage Employment; Obs 1005

**Table 7: Poverty Status - Multinomial Logit Marginal Effects 1992/99 Panel with Long Term Sick Interaction terms**

Variable	Not Poor	Chronic Poverty	Moving Out of Poverty	Moving Into Poverty
	(1)	(2)	(3)	(4)
<b>Constant</b>	0.2623 (1.472)	-0.1201 (-0.941)	-0.0628 (-0.384)	-0.0794 (-1.033)
<b>Age of Head</b>	-0.0069 (-0.968)	0.0045 (0.897)	0.0024 (0.367)	0.0001 (0.036)
<b>Age of Head Squared</b>	0.0001 (0.695)	0.0000 (-0.869)	0.0000 (-0.092)	0.0000 (-0.044)
<b>Female Household Head</b>	0.1150 (2.256)**	-0.0499 (-1.468)	-0.0498 (-1.081)	-0.0152 (-0.646)
<b>Dependency Rate</b>	-0.1398 (-1.706)*	0.0792 (1.316)	0.0342 (0.457)	0.0264 (0.732)
<b>Long Term Sickness</b>	-0.1277 (-1.341)	0.0425 (0.456)	-0.0861 (-0.589)	0.1713 (1.136)
<b>Household Size</b>	-0.0134 (-1.709)*	0.0089 (1.814)*	0.0034 (0.5)	0.0011 (0.285)
<b>Education</b>				
Primary	0.0184 (2.309)**	-0.0062 (-1.198)	-0.0168 (-2.325)**	0.0047 (1.317)
Secondary	0.0426 (2.502)**	-0.0278 (-1.921)*	0.0145 (0.911)	-0.0293 (-2.66)***
Spouse Primary	0.0199 (2.565)**	-0.0181 (-3.235)***	0.0004 (0.049)	-0.0022 (-0.626)
<b>Assets</b>				
Rural Land	0.0129 (0.445)	-0.0189 (-0.769)	0.0243 (0.866)	-0.0183 (-0.923)
Land	-0.0102 (-0.395)	0.0188 (0.817)	-0.0124 (-0.489)	0.0038 (0.197)
Chickens	0.0008 (0.099)	0.0077 (1.393)	-0.0011 (-0.14)	-0.0074 (-1.816)*
Cows	0.0108 (1.197)	-0.0123 (-1.905)*	0.0024 (0.292)	-0.0009 (-0.218)
Goats	0.0142 (1.741)*	-0.0055 (-1.009)	-0.0033 (-0.438)	-0.0054 (-1.413)
<b>Region</b>				
Urban Central	0.1465 (1.312)	-0.0775 (-0.827)	0.0595 (0.552)	-0.1285 (-1.676)*
Rural Central	-0.0136 (-0.297)	-0.0204 (-0.619)	0.0377 (0.866)	-0.0037 (-0.17)
Rural East	-0.1194 (-2.244)**	-0.0167 (-0.472)	0.1151 (2.416)**	0.0210 (0.898)
Urban East	0.0377 (0.292)	-0.0936 (-0.892)	0.1470 (1.193)	-0.0911 (-1.045)
Urban West	0.1974 (1.493)	-0.2137 (-1.677)*	0.1151 (0.897)	-0.0988 (-1.086)
Urban North	-0.0302 (-0.242)	-0.0419 (-0.461)	0.0983 (0.855)	-0.0261 (-0.421)
Rural North	-0.3214 (-4.216)***	0.1806 (4.533)***	0.0640 (0.973)	0.0768 (2.944)***
<b>Type of Work</b>				
Agricultural Own Account	-0.0524 (-0.996)	0.0542 (1.376)	-0.0139 (-0.284)	0.0121 (0.486)
Agricultural Wage	-0.0233 (-0.189)	0.0461 (0.537)	0.0386 (0.34)	-0.0614 (-0.813)
Other	-0.1108 (-1.082)	0.0708 (1.014)	0.0076 (0.084)	0.0324 (0.704)
Non Agricultural Own Account	0.1912 (2.53)**	0.0257 (0.431)	-0.1461 (-1.871)*	-0.0708 (-1.318)
<b>Interaction and Change Variables</b>				
Change in Household Size	-0.0091 (-1.249)	0.0109 (2.32)**	-0.0174 (-2.571)**	0.0156 (5.045)***
Long Term Sickness* Female Head	-0.1764 (-1.162)	-0.0647 (-0.6)	0.0894 (0.636)	0.1517 (2.257)**
Long Term Sickness*Agricultural Own Account	-0.0525 (-0.322)	0.1882 (1.765)*	-0.0716 (-0.443)	-0.0640 (-0.711)

\* Significant at 10% level

\*\* Significant at 5% level

\*\*\* Significant at 1% level

Defaults – Missed Education (for head and spouse), Urban West, Non Agricultural Wage Employment; Obs 1005

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<sup>1</sup> For a classic example see Engels (1845)

<sup>2</sup> In addition, the goal of reducing 'hunger' by half has clear implications for nutritional status and thus health.

<sup>3</sup> For a detailed review and analysis see Shahin (2004).

<sup>4</sup> One of us (Hulme) vividly remembers a young mother in a Delhi slum telling him that she never saves money, even when she has the chance, because '...if you save money, your children get sick and you have to spend the savings on medicine...of you don't save money your children don't get sick so often'.

<sup>5</sup> Indeed, in recent years things have become more complicated with the recognition that wealth is associated with behavioural changes (lack of exercise, sedentary lifestyle, increased intake of sugar and fat, loss of control of appetite) that cause health problems such as obesity, diabetes and coronary heart disease.

<sup>6</sup> 2002 Poverty figures show a slight increase in headcount poverty to 38.9%.

<sup>7</sup> AIDS prevalence figures fell between 1992 and 1997 (and 2000), however the number of individuals in the advanced stages of aids (i.e. the stages that would more frequently result in sickness) actually increased. However the increase in morbidity is also partly explained by the fall in the effectiveness of chloroquine in the treatment of malaria.

<sup>8</sup> Lawson, McKay and Okidi (2003) found similar patterns of chronic and transient poverty across all two, three and four wave panels for Uganda.

<sup>9</sup> 'Sick head' is used to refer to the household head having reported sickness within the 30 period preceding interview. The focus on a household heads health status as at 1992, as opposed to 1999, is based on preliminary descriptive data which indicated the influence of health in 1992 to be of more importance than health status in 1999. Thus supporting the hypothesis that there is a dynamic effect of sickness that occurs after the sickness period. Descriptive data of this nature can be seen in Lawson (2003).

<sup>10</sup> Unless otherwise stated 'long term sickness' refers to individuals being sick/ill for 10 or more days in every 30 day period.

<sup>11</sup> All significant results are at or below the 5% level.

<sup>12</sup> Jalan and Ravallion (1998) found the health of the household members to be associated with chronic poverty but not transient poverty.

<sup>13</sup> Significant at the 10% level for sick regressions and at the 5% level for long term sickness results.

<sup>14</sup> More fundamentally the current MDGs are a product of political processes and, from a technical perspective, are an imperfect instrument (WHO 2003:32). It is vital that MDGs acquire national identities and ownership, and that a more comprehensive set of health goals are prepared to match country circumstances.