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Malawi

Poverty and Vulnerability Assessment

Investing in Our Future

Full Report

December 2007

Poverty Reduction and Economic Management 1
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Republic of Malawi



The World Bank

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CURRENCY EQUIVALENTS

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MEASURES

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FISCAL YEAR

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ABBREVIATIONS AND ACRONYMS

ADD	Agricultural Development Division
ADMARC	Agricultural Development and Marketing Corporation
AGOA	African Growth and Opportunity Act
AHL	Auction Holding Limited
ARET	Agriculture Research and Extension Trust
ART	Anti-Retroviral Therapy
BOP	Balance of Payments
CEM	Country Economic Memorandum
COMESA	Common market for Eastern and Southern Africa
CPI	Consumer Price Index
DFID	Department for International Development
DHS	Demographic Health Survey
EBA	Everything But Arms
EPZ	Export Processing Zone
ESCOM	Electricity Supply Commission of Malawi
EU	European Union
FAO	Food and Agriculture Organization of the United Nations
FBO	Faith-Based Organization
FEWS	Famine Early Warning System
FTA	Free Trade Area
GDP	Gross Domestic Product
GOM	Government of Malawi
HAART	Highly Active Anti-Retroviral Therapy
HIPC	Highly Indebted Poor Countries
IDA	International Development Association
IFC	International Finance Corporation
IHS	Integrated Household Survey
IMF	International Monetary Fund
LCE	Local Commodity Exchange
LDC	Less Developed Countries

M&E	Monitoring and Evaluation
MASAF	Malawi Social Action Fund
MDGs	Millennium Development Goals
MDHS	Malawi Demographic Health Survey
MEPD	Ministry of Economic Planning and Development
MGDS	Malawi Growth and Development Strategy
MOAI	Ministry of Agriculture and Irrigation
MOHP	Ministry of Health and Population
MPRS	Malawi Poverty Reduction Strategy
MRA	Malawi Revenue Authority
MRFC	Malawi Rural Finance Company
NAC	National AIDS Commission
NACP	National AIDS Control Program
NASFAM	National Small Farmers Association
NFRA	National Food Reserve Agency
NGO	Non-Governmental Organization
NPV	Net Present Value
NRA	National Road Authority
NSNS	National Safety Nets Strategy
NSO	National Statistical Office
ORT	Other Recurrent Costs
PA	Prime Age
PRGF	Poverty Reduction and Growth Facility
PRSP	Poverty Reduction Strategy Paper
PSIA	Poverty and Social Impact Analysis
PWP	Public Works Program
RBM	Reserve Bank of Malawi
SADC	Southern Africa Development Community
SFFRFM	Smallholder Farmers' Fertilizer Revolving Fund of Malawi
SGR	Strategic Grain Reserve
SME	Small and medium Scale Enterprise
TAMA	Tobacco Association of Malawi
TCC	Tobacco Control Commission
TIP	Targeted Inputs Program
TLU	Tropical Livestock Unit
TNP	Targeted Nutrition Program
USAID	United States Agency for International Development
VCT	Voluntary Counseling and Testing

The Malawi Poverty and Vulnerability Assessment was prepared by a core team of Government and World Bank officials led by Antonio Nucifora (AFTP1, Senior Economist, the World Bank), and Time Fatch (Ministry of Economic Planning and Development), and comprising Kathleen Beegle (DECRG, World Bank), Gero Carletto (DECRG, World Bank), Rhoda Eliasi (Ministry of Economic Planning and Development), Shelton Kanyanda (National Statistical Office), Khwima Nthara (AFTP1, World Bank), and Diane Steele (DECRG, World Bank).

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**MALAWI POVERTY AND VULNERABILITY ASSESSMENT
INVESTING IN OUR FUTURE**

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MALAWI POVERTY AND VULNERABILITY ASSESSMENT

INVESTING IN OUR FUTURE

INTRODUCTION

1. This study builds a profile of the status of poverty and vulnerability in Malawi. Malawi is a small land-locked country, with one of the highest population densities in Sub-Saharan Africa, and one of the lowest per capita income levels in the world. Almost 90 percent of the population lives in rural areas, where most people are engaged in smallholder, rain-fed agriculture, and therefore highly vulnerable to annual rainfall volatility. A majority of households cultivates very small landholdings, largely for subsistence. As a result, poverty is pervasive and not merely the situation of the lowest economic groups. Therefore, while this report focuses on the least-well-off sections of the population, the analysis provides valuable information to accelerate wealth creation and economic growth for the whole of Malawi.

2. This Full Report presents the detailed analysis and results of the study. Due to the length and detail of this Full Report, a Synthesis Report presenting the main findings and policy recommendations stemming from the analysis is available as a separate publication (and also includes an executive summary).¹ The Full Report has three main sections. The first five chapters comprise the first part of the report, where we take an in depth look at poverty on the micro-level. Chapter One provides an overview of the income and non-income dimensions of well being in Malawi, including progress towards the Millennium Development Goals (MDGs). Chapter Two builds a profile of poverty and models the determinants of poverty at the household level. Chapter Three looks at the role of risk and vulnerability to shocks in both causing poverty, and hindering the ability of households to break free of the poverty trap. Chapter Four and Five take a more detailed look at two of the most severe and prevalent types of shocks faced by households, namely those relating to food security and the impact of chronic illness, respectively.

3. Part II of the report, comprising five chapters, focuses on the macro-level and provides policy recommendations to address some of the key findings of Part I of the report. Chapter Six briefly overviews macro-economic policy in Malawi and its bearing on economic growth, and identifies the large role of weather-related shocks in determining economic performance. Chapter Seven looks at the smallholder agriculture in detail, given the predominant role of agriculture both in household income and the economy at large. Given the sector's high degree of susceptibility to weather shocks, policies to mitigate climate shocks are explored. Chapter Eight looks at ways to boost trade as a poverty reduction strategy, focusing on the main export crop, tobacco, as an example. Chapter Nine examines the current social protection system in Malawi and recommends ways to improve the social safety nets, both to mitigate chronic poverty and as a means for breaking the poverty trap. Chapter Ten focuses on access to public services, (namely, health and education services), and looks at the distribution of public expenditure on these services across the population's income distribution.

¹ The complete set of reports (Synthesis Report, Full Report, and Annexes) is available on CD-ROM.

4. In Part III of the report, Chapter Eleven looks at the role of monitoring and evaluation systems in measuring poverty and in targeting and tracking poverty reduction efforts to maximize their effectiveness, and suggests ways to improve monitoring and evaluation in Malawi.

5. The main source of information used in this report is the new second Integrated Household Survey 2005 (IHS2), carried out by the National Statistical Office (NSO) in 2004/05, with technical support from the World Bank. This survey provides a wealth of information on household living conditions. The information has been analyzed to identify the major characteristics of poor households and the main constraints to wealth creation in Malawi. In addition, other data from the 1998 first Integrated Household Survey (IHS1 1998) is used to see how poverty and its characteristics have changed over time. The analysis has also been complemented with information from other sources, including the 1998 Population Census, the 2004 Malawi Demographic and Health Survey (MDHS 2004), as well as previous MDHS in 1992, 1996 and 2000.

CHAPTER 1: DIMENSIONS OF POVERTY IN MALAWI

INTRODUCTION

6. Malawi is a land-locked country in southern Africa, with little arable land, high population density, and a young and rapidly growing population. The Malawian economy has been very fragile and sustained growth has been elusive. The economy remains highly dependent on agriculture which has been subject to natural calamities, increasing the vulnerability of the largely rural population. As will be discussed in this chapter, the poverty situation has not improved since the 1990s, and income inequality remains fairly high.

7. This chapter discusses income and non-income dimensions of well-being in Malawi. While the focus of the chapter is to understand the situation of the least-well-off sections of the population, the analysis provides valuable information on the overall level of wealth and well-being for the whole of Malawi. The chapter presents poverty and inequality figures, at the national level and by region, and also briefly describes progress in improving living conditions using a suite of basic human development indicators. It gives updated information on the MDGs indicators that can be derived from the household survey, and briefly discusses Malawi's progress towards the MDGs.

8. The main source of information used is the recently completed second Integrated Household Survey (IHS2) that was carried out during March 2004 to March 2005. The IHS2 data has been analyzed to produce up-to-date and time-consistent poverty and inequality figures. In addition to the 2005 IHS2, the analysis draws on data from the 1998 first Integrated Household Survey (IHS1), as well as Demographic and Health Surveys in Malawi (MDHS in 1992, 1996, 2000, and 2004) and other surveys to review the main changes since the mid-1990s (for details of data sources available, see Annex 1A).

INCOME MEASURES OF POVERTY AND INEQUALITY

9. The most commonly used income measures of poverty and inequality rely on income or consumption-expenditure data collected from a sample survey of households. Consistent, high-quality data such as these have hitherto been lacking for Malawi, and the recently completed 2005 IHS2 provides the first high-quality set of data. In this section, the IHS2 dataset has been analyzed to produce up-to-date poverty and inequality figures, based on household consumption expenditures as a proxy for income (Box 1.1).² Where possible, time-consistent comparisons are made with estimates derived from the 1998 IHS1.

Income poverty and ultra-poverty in Malawi

² It should be noted that the consumption expenditure aggregate for the Dowa district has been replaced by imputed values. Preliminary calculations using the IHS2 data suggest that Dowa district is the least poor district in Malawi. According to the NSO, this observation does not match reality, and it is more likely that the IHS2 data collection for Dowa district may have been affected by enumeration problems. The values for Dowa district have therefore been substituted by an imputed value. The procedure to impute the values for the Dowa district is explained in Annex 1B.

10. Using the methodology outlined in Box 1.1, the poverty lines for identifying the poor and ultra-poor in Malawi are presented in Table 1.1.³ The poverty line in Malawi has been calculated at 16,165 Malawi Kwacha (MK) per person per year, or 44.3 MK per person per day.⁴ The line was calculated with a food component that was derived by estimating the cost of buying a sufficient amount of calories to meet a recommended daily calorie requirement. The food poverty line is 10,029 MK per person per year, or 27.5 MK per person per day. The non-food component of that total poverty line is 6,136 MK per person per year, or 16.8 MK per person per day. Following the standard methodology, the non-food component is calculated based on the non-food expenditure for those close to the food poverty line.

Table 1.1: Poverty line in Malawi Kwacha per person per year

	Poverty line (MK per person per year)
Poor	MK16,165
Ultra-Poor	MK10,029

Source: Our calculations based on National Statistical Office data from IHS2

11. Using this poverty line, the headcount poverty rate for the population of Malawi in 2005 is 52.4 percent (see Table 1.2). Given that Malawi's total population in 2005 is estimated at 12.3 million (see Chapter Two for details of Malawi's demographics), this implies that in 2005 about 6.4 million Malawians were living in poverty. It is also possible to calculate the portion of the population living below an ultra-poverty line. The ultra-poor are those households whose total per capita expenditure levels are below the food poverty line. In Malawi, 22.4 percent of the population lives below the ultra-poverty rate. That is, as many as 2.7 million Malawians, about one in every five people, lives in such dire poverty that they cannot even afford to meet the minimum standard for daily-recommended food requirement.

Geographical variations in poverty levels

12. Malawi is divided into three main regions, North, Central and South.⁵ The regional rates of poverty mask a striking difference in poverty rates between urban and rural areas: poverty is predominantly a rural phenomenon. Therefore, to calculate the geographic distribution of poverty in this study, urban areas are extracted as a separate category.⁶ While the national poverty rate is 52 percent, there is variation across regions (Table 1.2 and Figure 1.1). The South region has the largest poverty rate (64 percent) implying that two out of three people live in poverty in the rural areas of the South. The North region has the second highest proportion of poor people (56 percent). The Central region has the lowest proportion (47 percent) of poor. A similar pattern is observed for ultra-poor people.

³ The poverty line level is based on average national prices for February-March 2004. A more detailed explanation of how the consumption aggregate and poverty lines were calculated is presented in Annex 1B.

⁴ At the time of the IHS2, MK44.3 was roughly equivalent to US\$0.50.

⁵ The North region is made up of Chitipa, Karonga, Nkhata Bay, Rumphi, and Mzimba/Mzuzu City districts. The Central Region is made up of Kasungu, Nkhatakota, Ntchisi, Dowa, Salima, Lilongwe/Lilongwe City, Mchinji, Dedza, and Ntcheu districts. The South Region is made up of Mangochi, Machinga, Zomba/Zomba City, Chiradzulu, Blantyre/Blantyre City, Mwanza, Thyolo, Mulanje, Phalombe, Chikwawa, Nsanje, and Balaka districts.

⁶ Hence, unless otherwise specified, references in the text to 'Central Region', 'North Region' and 'South Region' exclude the relevant urban areas.

BOX 1.1: KEY CONCEPTS IN MEASURING POVERTY

WHAT IS POVERTY?

Poverty is a multidimensional concept encompassing numerous aspects of well-being. In practice, no one indicator can capture all its dimensions. Nevertheless, measures of poverty are routinely constructed to help policy-makers and researchers understand the poor are. The poverty measure in this report is based on standards adopted in many World Bank reports. An income measure of an individual's consumption-related expenditures is compared to a cost-of-basic-needs threshold, below which a person is deemed to be poor.

WHY NOT USE INCOME?

While welfare is measured by income in other settings (for example, income-based welfare is standard in the United States and other developed economies), measuring income is problematic in developing economies. First, many people do not have regular income, making current income difficult to assess at any point in time. Second, income from farm activities may be hard to enumerate if households do not keep formal accounts of revenues and expenditures. Third, households are likely to intentionally under-report earnings from informal activities. In Malawi, agriculture's share of GDP has remained steady at about 40 percent, and there is a large informal sector. Income from self-employment agricultural activity accounts for a sizeable share of an average household's income. Thus, given the considerable measurement issues, income is deemed not to be a suitable standard to assess poverty in Malawi. Instead, household welfare for the Malawi poverty assessment is based on total household consumption and expenditures (including implicit expenditures on home-produced food items).

HOW DO WE MEASURE POVERTY?

In order to compute a poverty indicator for each individual in the household survey, it is necessary to: (a) choose a welfare indicator, and (b) compute a threshold for this welfare indicator. This threshold level of welfare that distinguishes poor households from non-poor households is the poverty line.

The welfare indicator used in analysis is the total annual per capita consumption expenditure reported by a household, expressed in Malawi Kwacha deflated to February/March 2004 prices. The poverty line is a subsistence minimum based on the cost-of-basic-needs methodology. It is comprised of two parts: minimum food expenditure based on the food requirements of an individual and critical non-food consumption. Food needs are tied to the recommended daily calorie requirement. Non-food needs are estimated based on the expenditure patterns of households whose total expenditure is close to the minimum food expenditure.

In this way, a poverty line and an 'ultra-poverty' line can be constructed. Individuals who reside in households with consumption lower than the poverty line are labeled "poor". The "ultra-poor" live in households whose total consumption per capita on both food and non-food items is lower than the subsistence minimum food expenditure. In other words, the ultra-poverty line is the same as the food poverty line. The baseline poverty threshold in this report estimates the cost of a minimum basket, which is calculated using the WHO recommended calorie requirements for moderate activity levels as described in Annex 1B. These calorie requirements were applied to the IHS2 sample to yield a median calorie requirement of 2,400 calories per day per person. Choosing a more generous minimum food basket (in terms of more expensive calories) will result in a higher poverty line and higher poverty rate; likewise a higher calorie standard will increase the poverty threshold since more calories cost more.

HOW DOES OUR MEASURE OF POVERTY ACCOUNT FOR HOUSEHOLD SIZE AND COMPOSITION?

To accurately identify households whose total per capita consumption on food and non-food items is lower than the minimum threshold, we need to consider that there may be economies of scale in expenditure. For example, a 2-person household does not double expenditures on housing, utilities or other non-food items for which expenditure can be shared (these are 'public' goods whose costs do not vary whether one or more persons use them). Larger households might also buy items in bulk, which can mean lower prices or discounts. In addition, the age structure of household members is also considered. A small child is assumed not to be equivalent to an adult in terms of consumption needs. Therefore, household needs are computed based on the use of equivalence scales which account for the different size and composition of households. The choice of equivalence scale reflects judgments about differences in needs. Adjusting for household size and composition can be done in numerous ways, and there is not a clear dominant choice. Rather, it is important to ascertain that the general profile is robust to choice of scale. Details of the equivalence scale used in this study are provided in Annex 1C.

HOW DO WE CHOOSE THE POVERTY LINE? ABSOLUTE VS. RELATIVE POVERTY MEASURES

By assessing the poverty line using a cost-of-basic needs approach, we will have a poverty line that indicates an *absolute* measure of poverty. An alternative approach measures *relative* poverty within a country, using a poverty line based on the distribution of a welfare measure, such as 60 percent of median income (the standard in Western Europe). In low-income economies, however, a relative measure is not a useful indicator of the fraction of the population unable to meet minimum living standards. Moreover, relative poverty measures do not provide a clear indication of trends in poverty over time, as they also reflect distributional changes.

13. About 25 percent of the population in urban areas is living in poverty, compared to 56 percent of the rural population. That is, a person in a rural area is more than twice as likely to be poor. The difference is more dramatic among the ultra-poor. Overall, 22.4 percent of the population is ultra-poor. Of this group, 24.2 percent of the rural population is ultra-poor while only 7.5 percent of the urban population is ultra-poor (Table 1.2 and Figure 1.1).

14. It is important to note that distribution of the population is slightly different from that of the poor. In terms of population distribution, the Southern rural area has 40 percent, the Central rural has 38 percent, and the Northern rural has 10 percent while the urban areas contribute 11 percent. Hence, the Southern rural areas have a disproportionate share of the poor, reflecting both the higher population and the higher poverty rate in this region. The urban areas are contributing only 6 percent of all the poor people in the country.

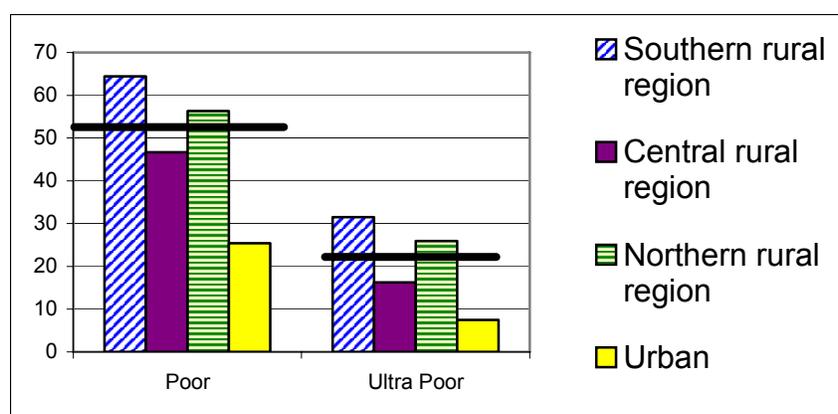
Table 1.2: Poverty headcount and distribution of Malawi's poor by place of residence in 2005

	Poverty headcount (%)	Ultra-Poor (%)	Percent of Malawi's poor	Percent of Malawi's population
Malawi	52.4	22.4	100.0	100.0
North rural region	56.3	25.9	10.9	10.2
Central rural region	46.7	16.2	33.9	38.1
South rural region	64.4	31.5	49.7	40.4
Urban	25.4	7.5	5.5	11.3

Notes: 'Central region', 'North region' and 'South region' exclude the relevant urban areas. Malawi's population in 2005 is estimated at 12.4 million (Source: National Statistical Office)

Source: Our calculations based on NSO data from IHS2

Figure 1.1: Proportion of poor and ultra-poor persons by region in 2005



Note: The solid line indicates the national poverty level.

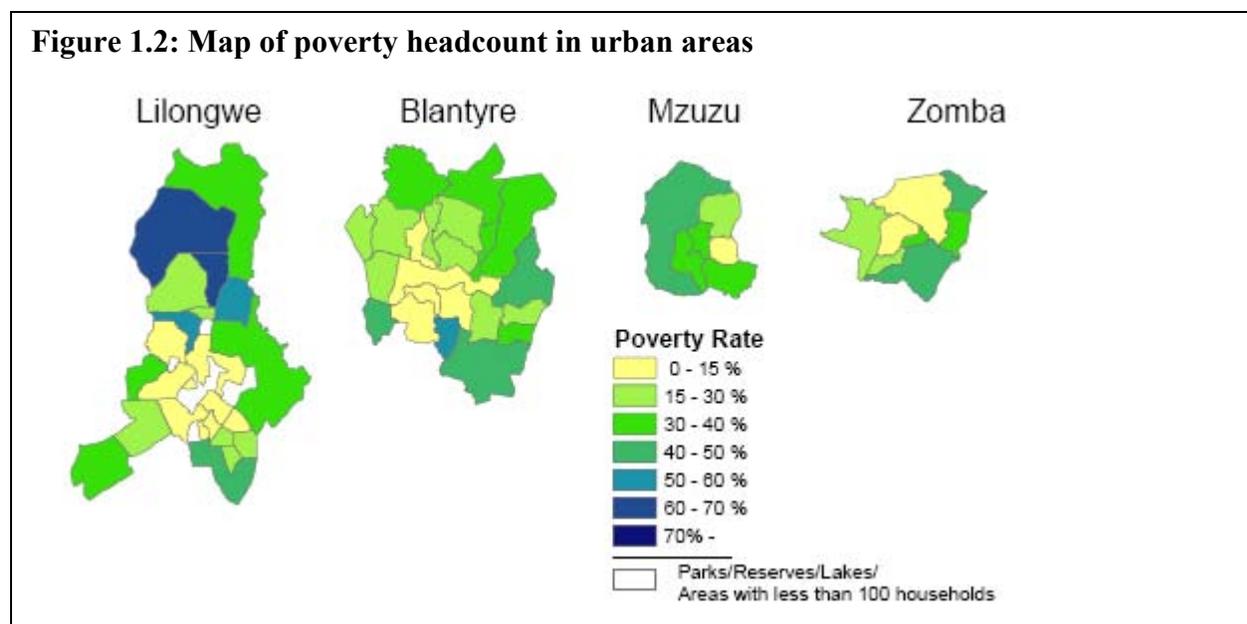
Source: Our calculations based on NSO data from IHS2

15. The poverty maps in Figures 1.2 and 1.3 provide a breakdown of the headcount poverty rates at the Traditional Authority administrative level, to give a detailed overview of where the pockets of deepest poverty are in the country. The idea of a poverty map is to combine census information and household survey information to estimate poverty and inequality in greater

geographical detail than the survey is able to alone.⁷ In this study, we have created a poverty map using the 2005 IHS2 survey and the 1998 census.⁸

16. The poverty map shows that the highest levels of poverty are concentrated in the southernmost and northernmost areas of the country. The central region displays consistently lower rates of poverty (except for two very isolated and small pockets of poverty). The Northern region exhibits the highest variation in poverty rates, including both some of the areas with the highest concentration of poverty as well as some of the relatively better off areas. Urban areas also exhibit substantial of variation.

17. Headcount poverty rates indicate the share of the population below a minimum income level (the poverty line), but they don't reveal any information about the distribution of income above and below that threshold. Inequality measures, instead, consider the entire distribution of income levels. Figure 1.4 shows the distribution of income across Malawi's population. It shows the extreme disparity between incomes of the richest and poorest in the country, with the distribution skewed towards the lower end of the scale. The graph also shows that the population is concentrated around the poverty line, such that only few Malawians have incomes which are more than double the poverty line.

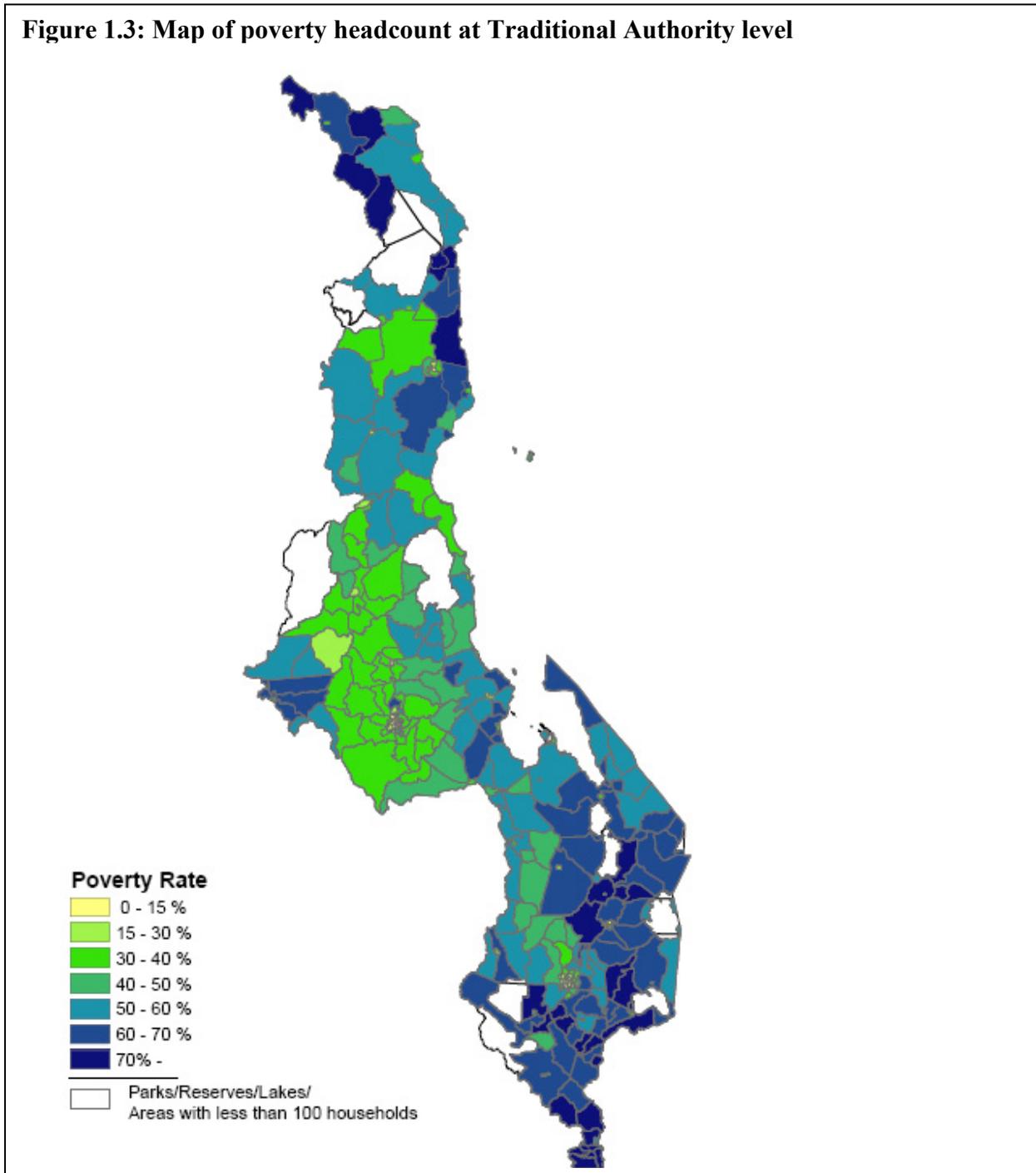


Source: National Statistical Office, IHS2 2005 and 1998 Census

⁷ The first poverty maps of Malawi were prepared by IFPRI based on the 1998 IHS1 data and the 1998 Population and Housing Census. The methodology for this map generally follows previous work in Malawi, Madagascar and other countries. The basic steps are described in Annex 1D. For additional information and description of the methodology see Mistiaen et al. (2002), Demombynes et al. (2002) and Elbers et al. (2002). For information on the first Malawi poverty map see Malawi Social Atlas and background papers by Benson et al. (2002).

⁸ The predictions of poverty in this poverty map build on the same census data as used for the 1998 map (a new census will not be conducted until 2008), but use the more recent IHS2 household survey data. As economic growth has been quite moderate since 1998, it is reasonable to assume that geographical picture of poverty has not changed much. However, since the IHS2 2005 survey offers much improved data quality, the new poverty map takes advantage of the better data.

Figure 1.3: Map of poverty headcount at Traditional Authority level



Source: National Statistical Office, IHS2 2005 and 1998 Census

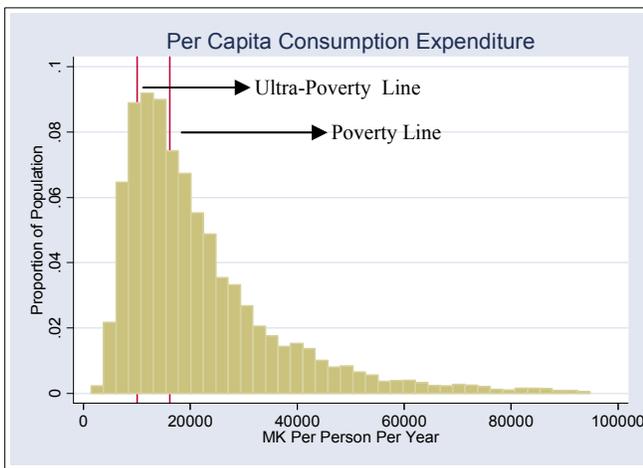
Income Inequality in Malawi

18. Figures 1.5 and 1.6 also display the extent of inequality. Figure 1.5 plots the median level of (expenditure as a proxy for) income per capita for each of the deciles of the population. As shown, the richest 10 percent of the population has a median per capita income that is eight times higher (MK50,373 per person per annum) than the median per capita income of the poorest 10

percent (MK6,370 per person per annum). Moreover, the richest 10 percent of the population has a median income that is three times higher than the overall median income in the country.

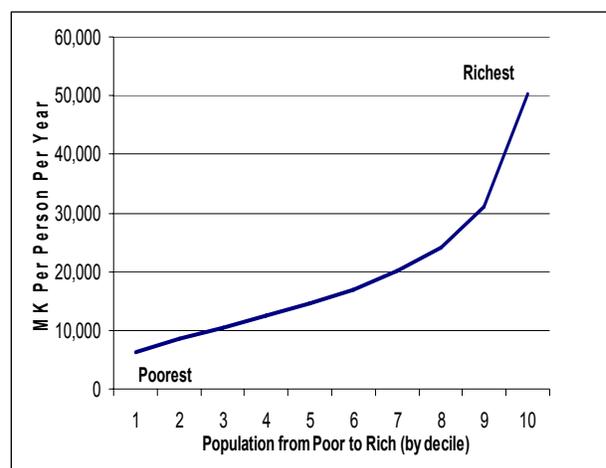
19. Figure 1.6 displays the Lorenz Curve in 2005 which shows the share of income (again proxied by expenditures per capita) associated with a given share of the population. The diagonal line in the graph represents perfect equality, since it indicates that any percentage of the population would receive the same percentage of total income. The curved line below the diagonal represents how far the population is from perfect equality. The closer the curved line is to the diagonal, the more equal the distribution is. The Lorenz curve shows that while the bottom 50 percent of the population accounts for only 25 percent of total income, the richest 5 percent accounts for 20 percent of the total income.

Figure 1.4: Distribution of per capita consumption expenditure in 2005



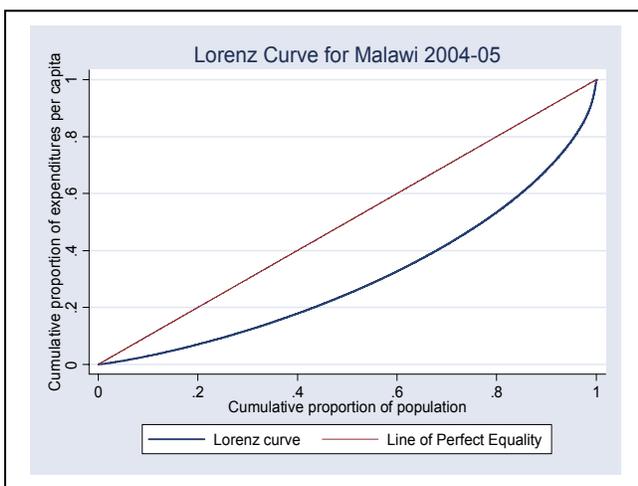
Source: National Statistical Office, IHS2

Figure 1.5: Per capita consumption expenditure by decile in 2005



Source: National Statistical Office, IHS2

Figure 1.6: Lorenz Curve in 2005



Source: National Statistical Office, IHS2

Table 1.3: Gini coefficient in 1998 and 2005

	1998	2005
Malawi	0.39 (0.005)	0.39 (0.004)
Urban	0.44 (0.012)	0.48 (0.009)
Overall Rural	0.33 (0.005)	0.34 (0.004)
North	0.36 (0.021)	0.34 (0.001)
Central	0.31 (0.006)	0.32 (0.004)
South	0.33 (0.008)	0.35 (0.014)

Source: National Statistical Office, IHS2

20. The Gini coefficient is a standard measure of the amount of inequality, and is based on the mathematical measure of the Lorenz curve. In general, the Gini coefficient can take a value from 0 (perfect equality) to 1 (perfect inequality). Table 1.3 shows the levels of Gini coefficient across the country. The extent of inequality does not differ much across rural areas but is substantially higher in urban areas. A detailed map of the Gini coefficient across Malawi is provided in Annex 1D.

BOX 1.2 CAN WE COMPARE POVERTY AND INEQUALITY IN MALAWI TO NEIGHBORING COUNTRIES?

International comparisons of poverty and inequality rates across countries cannot be made easily. In fact the calculation of household ‘consumption-related expenditures’ will not follow the same identical definitions across countries, and will depend on a variety of factors (including the length of the recall period over which consumption is recorded, the degree of disaggregation of consumption items, the methods for imputation of housing and durables consumption), and also because countries set different subsistence minimum standards, and use different methodologies, to calculate national poverty estimates. Additional factors confounding comparability include differences in survey nonresponse rates across countries (see Korinek, Mistiaen, and Ravallion 2005). Differences across countries in the availability of spatial price indexes can also affect conclusions. Across countries there tends to be little uniformity in whether, and how, spatial price variation is accommodated. Without a concerted effort to harmonize data collection across countries, it is unlikely that such global databases can be relied on to provide more than a tentative picture of differences in poverty and inequality across countries.*

Cross-country datasets on monetary poverty and inequality generally incorporate some attempts to improve comparability, but they typically fall far short of achieving strict comparability. For instance, poverty comparison based on a common ‘subsistence minimum standard’ have been calculated by using a fixed poverty line, notably the well-known “\$1 per day” estimates. In this approach, one dollar is converted into local currency units using the purchasing power parity (PPP) conversion factor. PPP is a form of exchange rate that takes into account the cost and affordability of common items in different countries. This conversion is defined as the number of units of a country’s currency required to purchase a standard basket of goods and services collected in all countries. In this study, we calculate the “\$1 per day” poverty line. Specifically, the 1993 PPP conversion factor (1.5221) was updated using Malawi CPI inflation rates from 1993 to 2004. The results indicate that in 2004, one US dollar was equivalent in terms of purchasing power to 28.13 Malawi Kwacha. This translates to a “\$1 per day” poverty line of MK 11,051 per person per year. In 2005, the portion of the population living below this poverty line was 28 percent, which puts Malawi in the middle of the range of values for neighboring sub-Saharan countries. As discussed in the previous paragraph, however, it should be emphasized that this calculation is tentative, and falls short of achieving strict comparability.

* Source: Adapted from Box 2.5 in World Bank (2005). World Development Report 2006: Equity and Development. World Bank, Washington D.C

Depth of poverty measures

21. The poverty headcount measures the number of people below the poverty line, but does not measure the distance from the poverty line. The poverty gap shows how far below the poverty line households are found, on average, expressed as a percentage of the poverty line. Those households that are close to the poverty line could be improved out of poverty with less effort than those that are far below the line. In 2005, the poverty gap was 17.8 percent overall and 5.3 percent for the ultra-poor (Table 1.4). In other words, the poor, on average, subsist on 17.8 percent less than the MK16,165 poverty line, and the ultra-poor, on average, survive on 5.3

percent less than the MK10,029 ultra-poverty line. A detailed map of the poverty gap is found in Annex 1D. It shows that the poor are much poorer in the northernmost and southernmost areas of the country, while they tend to be relatively closer to the poverty line in the central region.

Table 1.4: Poverty Headcount, Income Gap, and Severity of Poverty estimates in 1998 and 2005¹

	1998			2005		
	Headcount	Gap	Severity	Headcount	Gap	Severity
<i>Malawi</i>						
Poor	54.1	18.6	8.5	52.4	17.8	8.0
(standard error) ²	(0.8)	(0.5)	(0.3)	(1.0)	(0.5)	(0.3)
Ultra-poor	23.6	5.7	2.0	22.4	5.3	1.8
(standard error)	(0.9)	(0.3)	(0.1)	(0.9)	(0.3)	(0.1)
<i>By Region</i>						
Poor						
Urban	18.5	4.8	1.8	25.4	7.1	2.8
(standard error)	(1.7)	(0.6)	(0.3)	(2.8)	(1.0)	(0.5)
Rural overall	58.1	20.2	9.2	55.9	19.2	8.6
(standard error)	(0.9)	(0.5)	(0.3)	(1.0)	(0.5)	(0.3)
North	56.3	19.5	8.9	56.3	19.6	8.8
(standard error)	(3.7)	(2.0)	(1.2)	(2.7)	(1.4)	(0.8)
Central	47.6	14.4	6.0	46.7	14.1	5.9
(standard error)	(1.7)	(0.8)	(0.4)	(1.6)	(0.6)	(0.3)
South	68.4	25.7	12.3	64.4	23.8	11.2
(standard error)	(1.4)	(0.9)	(0.6)	(1.5)	(0.8)	(0.5)
Ultra-Poor						
Urban	4.9	1.1	0.5	7.5	1.6	0.5
(standard error)	(1.0)	(0.3)	(0.2)	(1.4)	(0.3)	(0.1)
Rural overall	25.7	6.2	2.2	24.2	5.8	2.0
(standard error)	(0.9)	(0.3)	(0.1)	(0.9)	(0.3)	(0.1)
North	24.9	6.0	2.1	25.9	5.9	1.9
(standard error)	(3.7)	(1.2)	(0.5)	(2.4)	(0.7)	(0.3)
Central	16.3	3.5	3.2	16.1	3.5	1.1
(standard error)	(1.4)	(0.4)	(0.2)	(1.0)	(0.3)	(0.1)
South	34.6	8.9	1.2	31.5	7.9	2.8
(standard error)	(1.6)	(0.6)	(0.3)	(1.5)	(0.5)	(0.2)

Notes: 1. These estimates have been calculated using IHS1 and IHS2 data. Poverty measures from the 1998 IHS1 were calculated in 2000 and the estimate of the poverty headcount was 65.3 percent (National Economic Council, 2000). In this study the 1998 estimates (from IHS1) have been recalculated because the survey instruments & methods of calculating the poverty rates have been revised and improved to meet local and international standards (see Boxes 1.1, Box 1.2, and 1.3). In order to ensure comparability with the 2005 IHS2 estimates there we have recalculated the 1998 IHS1 estimates (using the same revised methodology as for the 2005 IHS2).

2. The statistical precision of the estimates is measured by the 'standard errors', which are shown in parenthesis. A 'confidence interval' which gives a 95 percent probability of including the real value can be calculated around each estimated value as follows: The lower bound is equal to the estimated value minus (1.9644 * standard error) and the upper bound is equal to estimated value plus (1.9644 * standard error). The resulting confidence interval around the estimate provides a range which is likely to include the real values at 95 percent probability. It is also worth noting that in comparing the 1998 and 2005 estimates, if the confidence intervals around the two estimates (for 1998 and 2005, respectively) are overlapping, then there is a possibility that there may have been no change over the period.

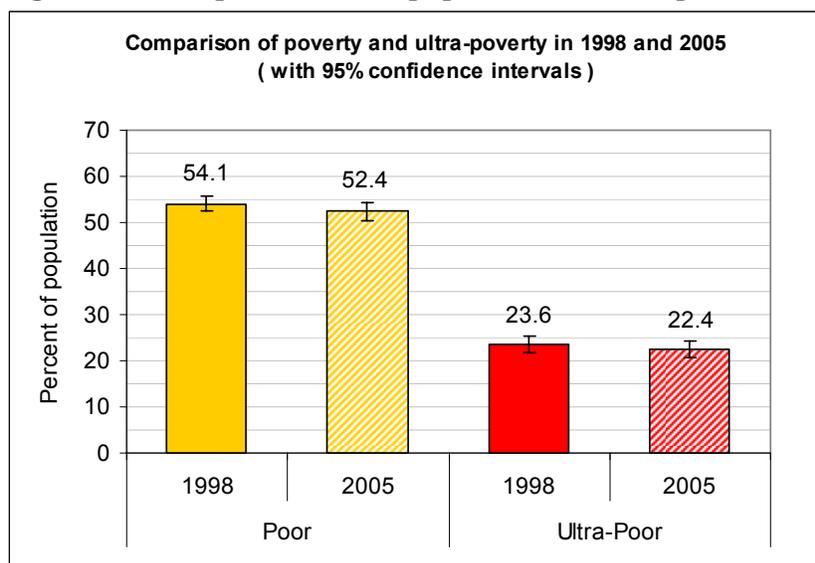
Source: National Statistical Office, IHS1 and IHS2

22. The severity figure is a more sophisticated, weighted measure of poverty. It takes into account the income gap and the inequality amongst the poor, whereby a dollar of income gap for the extreme poor is given more weight than a dollar of income gap for those who are just under the poverty line. As a result, the index increases both with respect to the income gap and with respect to the existence of extreme poverty. Unfortunately there is no simple interpretation of the severity measure, beyond the fact that the lower the measure the better. The poverty severity in Malawi in 2005 is 8 on average, with large regional differences ranging from 11.2 in the South region to 5.9 in the Central region, again confirming that the South holds the highest number of poor and ultra-poor (Table 1.4). Severity of poverty is much lower in the urban areas, confirming that poverty in urban areas is not as extreme as in rural areas.

EVOLUTION OF POVERTY AND INEQUALITY BETWEEN 1998 AND 2005

23. As highlighted above, the IHS2 estimate of the poverty rate in 2005 is 52.4 percent. It should be emphasized that this rate should not be directly compared to the 65.3 percent estimate from the 1998 IHS1 (National Economic Council, 2000). This is because the survey instruments & methods of calculating the poverty rates have been revised and improved to meet local and international standards (see Boxes 1.1, 1.2, and 1.3). Despite this change in survey techniques, an effort was put in place to compute the poverty rates for the previous IHS using the current methodology. In this exercise, poverty estimates from IHS1 were recalculated using regression models to impute expenditure per capita based on comparably measured household characteristics (see the Annex 1D for details of the methodology applied). The poverty rates calculated from IHS1 using this methodology can be compared directly to the poverty rate calculated from the IHS2. The results are shown in Figure 1.7, Table 1.3 and Table 1.4.

Figure 1.7: Proportion of the population deemed poor and ultra-poor in 1998 and 2005



Notes: 1. Estimates for 1998 have been recalculated using the same methodology as for 2005 to allow comparisons across the two datasets (and these estimates cannot be compared to the estimates for 1998 which were presented by National Economic Council in 2000).

2. The 'confidence intervals' around each estimate has been calculated to give a 95 percent probability of including the real value.

Source: National Statistical Office, IHS1 (1998) and IHS2 (2005).

24. The overall poverty rate remained about the same between 1998 and 2005. About 54.1 percent of the population was deemed poor in 1998 while the rate is at 52.4 percent in 2005. The slight decrease is not statistically significant.⁹ The distribution of poverty has also not changed much. Rural poverty was much higher than urban poverty already in 1998. The South region had the highest rate of poverty followed by the North and Central regions.¹⁰

25. There have been some movements in relative levels of poverty, however. Urban poverty has increased from 18 percent in 1998 to 25 percent in 2005.¹¹ This increase is more than offset by a decrease in rural poverty in the South from 68 to 64 percent. Hence while rural areas remain disproportionately poorer than urban areas, urban poverty has been rapidly increasing. Also, the gap between the South and the other rural regions is diminishing. These changes are

BOX 1.3: MEASURING PROGRESS BY COMPARING THE IHS1 AND IHS2

CAN WE COMPARE IHS1 AND IHS2?

The IHS1 and IHS2 surveys, while similar in many respects, are based on two different methodologies, and some of the questions included in the surveys are not identical. While the IHS2 survey was designed, in part, to have sections that would be directly comparable to the IHS1, the major difference between the two surveys was the method used to collect food consumption data. In IHS1, a diary was used to collect information over 14 days, whereas in IHS2, recall questions covering food consumed during the past week were used. This and other improvements in the design of the IHS2 make it difficult to calculate consistent estimates of household welfare and poverty over time. (*) Nevertheless, as described below, considerable effort has been made to develop comparable indicators, as well as to re-estimate Malawi's poverty lines such that they can be compared.

WHAT ARE THE KEY STEPS IN THE METHODOLOGY?

Because of the differences in the food consumption data collected, we could not simply take the poverty measure developed from the IHS1 data and compare this with the poverty measure calculated in the IHS2. Instead, we took the data from the IHS1 survey and recalculated an estimate of 1998 poverty, which we then compared to our IHS2 results.

The steps involved in computing a comparable IHS1 poverty estimate are: (1) estimate per capita expenditure for IHS1 households based on a regression model of per capita expenditure developed from IHS2 using a set of household characteristics measured in both surveys, and (2) estimate poverty rates for households using the imputed per capita expenditure, and applying the IHS2 poverty lines. The main assumption imbedded in this approach is that the correlation between poverty and the set of household characteristics has not changed significantly over time. (A second important assumption is that the heteroskedastic process for the error term also remains the same across the two years.) The approach used follows recently-developed statistical techniques that originated in Elbers et. al. (2002, 2003), and has since been widely applied in different countries, in particular for poverty maps, but also for survey-to-survey imputations as used here. See, for example, Kijima and Lanjouw (2003), Luoto (2005). Additional details of the methodology adopted are provided in Annex 1F.

This method allows the calculation of a complete set of comparable poverty indicators – headcount, gap, severity, and Gini Index. It should be emphasized again, however, that the results reported here for the IHS1 will not be the same as results reported in earlier reports, because of the change in methodology.

(*) For more information on the differences in the questionnaires used in the IHS1 and the IHS2, see the Basic Information Document for the IHS2. This is available from the Malawi NSO (<http://www.nso.malawi.net/>).

⁹ A 'confidence interval' which gives a 95 percent probability of including the real value can be calculated around each estimate by using the 'standard errors' shown in Table 1.4. Since the confidence intervals around the 1998 and 2005 estimates overlap, we conclude that there is a significant statistical probability that there may have been no change over the period between the two surveys.

¹⁰ As discussed above, it is important to note that distribution of the population is slightly different from that of the poor. In both 1998 and 2005 the South region has a disproportionately high share of the poor reflecting the higher poverty rate in this region while the Central region has a slightly lower poverty rate than its population share.

¹¹ It should be noted that the two confidence intervals (for 1998 and 2005 urban poverty headcount estimates, respectively) marginally overlap, indicating that there is less than 95 percent confidence that the increase is statistically true.

consistent with the anecdotal information about a substantial increase in migration from rural areas into urban areas.

26. Similar patterns can be observed when comparing ultra-poverty, as well as changes in the poverty gap, the severity measure and the Gini coefficient. At the national level changes between 1998 and 2005 are not statistically significant. Ultra-poverty, poverty gaps and severity have increased in urban areas, and this increase is more than offset by decreases in the South (Table 1.4). Little has changed in the Central and North regions of the country. Inequality has also not changed much (Table 1.3). Urban inequality has increased, reflecting the increased proportion of poor people in urban areas.

EVOLUTION OF NON-INCOME DIMENSIONS OF POVERTY

27. The previous sections have highlighted that income measures of poverty have not changed significantly over the past decade. This section briefly highlights recent trends in living conditions of Malawi's population using a suite of non-income human development indicators, such as literacy, school enrollment, malnutrition, infant mortality, and maternal mortality.

Table 1.5: Malawi, key human development indicators, 2003

	Malawi ¹	Least Developed Countries	Sub-Saharan Africa
Human poverty index (HDI): ² rank out of 177 countries	165	..	..
Adult literacy rate (% ages 15 and above) ³	64.1	53.6 ⁵	60.5
Combined gross enrolment ratio for primary, secondary, tertiary ⁴	72	45 ⁶	50
Births attended by skilled health personnel (%)	57	34 ⁵	41 ⁵
Physicians (per 100,000 people) ⁷	1.1	..	..
Life expectancy at birth (years) ⁷	37.5	52	46
Under-five mortality rate (per 1000 live births)	133	156	179
Infant mortality rate (per 1000 live births) ⁷	76	97	104
One-year-olds fully immunized against tuberculosis (%)	91	79	75
One-year-olds fully immunized against measles (%)	79	67	62
Maternal mortality ratio adjusted (per 100,000 live births)	984	..	..
Children underweight for age (% under age 5)	22	..	..
Children under height for age (% under age 5)	48	..	..

Notes: 1. Data for Malawi refer to the most recent year available between 2000 and 2005. Due to differences in methodology and timeliness of underlying data, comparisons with other countries should be made with caution.

2. A composite index measuring average achievement in three basic dimensions of human development: a long and healthy life, knowledge and a decent standard of living.

3. Data refer to national estimates from censuses or surveys between 2000 and 2004, unless otherwise noted.

4. Data refer to the school year 2002/03, unless otherwise noted.

5. Data refer to a year between 1995 and 1999.

6. Preliminary UNESCO Institute for Statistics estimate, subject to further revision.

7. Data refer to the most recent year available during the period 1995 to 2005

Source: Human Development Reports, and Malawi DHS various reports.

28. Malawi's current status in terms of key human development indicators is summarized in Table 1.5. In general, Malawi scores above the average for Africa in terms of education (adult literacy and gross enrolment ratios). In most health indicators, however, Malawi scores well below the average for Africa, notably with low life expectancy, low child immunization rates,

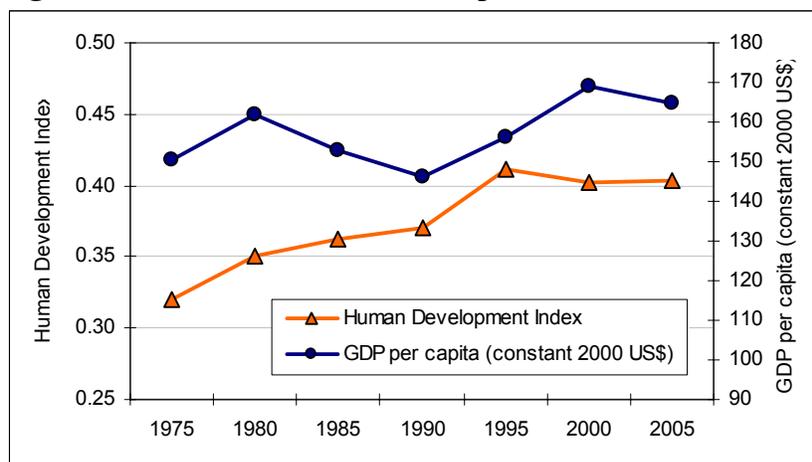
and exceedingly high maternal mortality. The current status of these human indicators is given greater scrutiny in the poverty profile built in Chapter Two.

29. The Human Development Index (HDI) is a widely used multi-dimensional summary indicator of development.¹² The HDI is a comparative measure of poverty, literacy, education, life expectancy, childbirth, and other factors for countries worldwide. It is a standard means of measuring well-being, especially child welfare. The HDI measures the average achievements in a country in three basic dimensions of human development:

- A decent standard of living, as measured by gross domestic product (GDP) per capita at purchasing power parity (PPP) in USD.
- Knowledge, as measured by the adult literacy rate (with two-thirds weight) and the combined primary, secondary, and tertiary gross enrolment ratio (with one-third weight).
- A long and healthy life, as measured by life expectancy at birth.

30. Malawi's Human Development Index has stagnated during the past decade. Each year, UN member states are listed and ranked according to these measures. In 2005, Malawi ranked 165 out of 177 countries, reflecting the extremely low achievement in the three basic dimensions of human development measured by the HDI. The HDI value in Malawi increased steadily between 1975 and 1995, but has stagnated since 1995 (Figure 1.8). Unfortunately, the pattern in education and health indicators mirrors the absence of any changes in income measures of poverty during the last decade, as discussed in previous sections.

Figure 1.8: Malawi Human Development Index, 1975-2005



Source: UNDP statistics, available online at <http://hdr.undp.org/statistics/data/countries.cfm?c=MWI>

Knowledge: changes in education indicators for Malawi

31. Over the last decade there has been a significant improvement in the proportion of Malawians who have received some formal education (World Bank 2004). According to the 1992 Malawi Demographic and Health Survey (MDHS),¹³ the proportion of men and women

¹² Notably, the index has been used since 1993 by the UNDP in its annual report.

¹³ A total of 3 DHS have been carried out in Malawi in 1992, 2000 and 2004. The Malawi DHS are part of the world-wide MEASURE/Demographic and Health Surveys (DHS) Program, funded by the United States Agency for

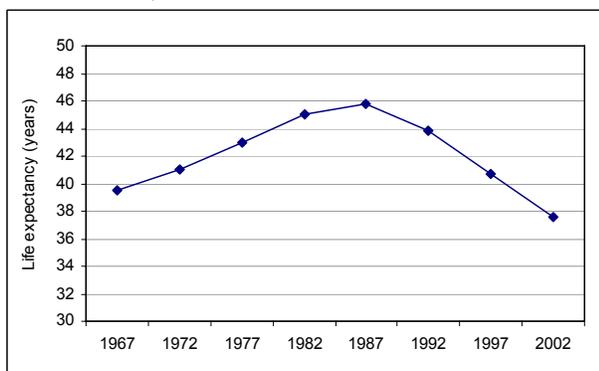
who had never attended school was 21 and 47 percent, respectively. In the 2004 MDHS, these percentages had dropped to 12 and 23 percent, respectively. Differences by sex remain noteworthy, however, and are exacerbated when looking at secondary school. In the 2004 MDHS, while 26 percent of men had attended secondary school, the corresponding proportion for women was only 16 percent.

32. In line with the trends in education, literacy among adults has been increasing (DHS EdData, 2002). In 1992, 44 percent of women were literate (ability to read), compared to 56 percent in 2000. For men, literacy increased from 75 percent in 1990 to 79 percent in 2000.

A long and healthy life: changes in health indicators for Malawi

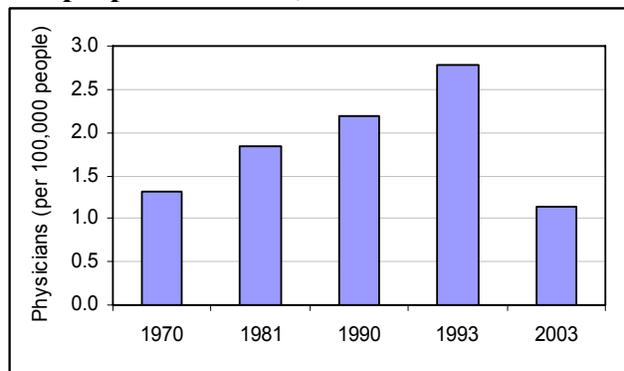
33. Life expectancy has been decreasing sharply during the last 20 years, from 46 years in 1987 to around 37 years in 2002 (Figure 1.9). As discussed in Chapter Five this trend is common to many Sub-Saharan African countries as a result of the spread of the HIV/AIDS epidemic. There is little difference between the life expectancy for males and females in Malawi.

Figure 1.9: Life expectancy at birth in Malawi, 1967-2002



Source: UNDP statistics

Figure 1.10: Physicians per 100,000 people in Malawi, 1970-2003



Source: UNDP statistics

34. The number of doctors per 100,000 people remains extremely low, and has been decreasing rapidly during the past decade (Figure 1.10). This reduction is the result of both the loss of skilled personnel due to the HIV/AIDS and the brain drain to developed countries as a result of the wage differentials. In order to stop this trend, the remuneration package for physicians (and nurses) has recently been improved by the Government, with support by the donor community.

35. The availability of medical assistance at delivery helps to lower the risk of adverse pregnancy outcomes, including lowered rates of maternal morbidity, maternal mortality, and perinatal mortality. However, the percentage of births assisted by a doctor or nurse/midwife has not changed much since the early 1990s. The proportion of births that were assisted by a doctor

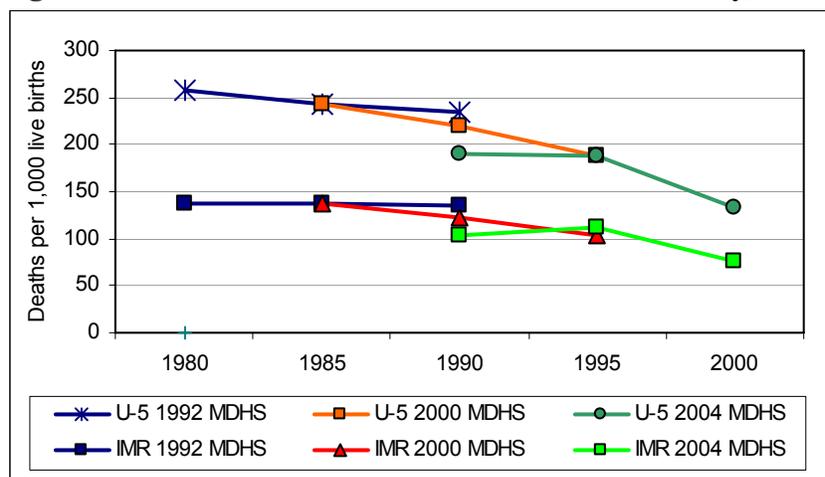
International Development (USAID). The program is designed to collect data among others on fertility, family planning and maternal and child health.

or nurse/midwife at delivery in the 2004 MDHS is 57 percent. This is about the same level observed in the 1992 MDHS (55 percent) and the 2000 MDHS (56 percent).

36. Over the course of the 1990s Malawi's maternal mortality ratio (MMR) doubled to one of the highest in the world. According to the 2000 MDHS, the MMR reached 1,120 per 100,000 live births, nearly double the MMR of 620 per 100,000 live births estimated from the 1992 MDHS.¹⁴ This decline has been attributed to several factors, including poor health care, health systems deficiencies, poor access to care and harmful patient-related behavior (see inter alia, McCoy et al., 2004). Hence, by the year 2000 Malawi faced one of the highest maternal mortality rates in the world. Since the year 2000 the situation appears to have improved, however. The 2004 MDHS indicates that the maternal mortality has declined to 984 per 100,000 live births in 2004.

37. During the 1980s there was very little change in childhood mortality. During the 1990s, however, a gradual decrease in infant and under-five mortality is observed, which appears to have accelerated in the most recent five-year period.¹⁵ This is true for all measures, but most importantly during the first month of life. As shown in Figure 1.11, the infant mortality rate (IMR) has decreased from 135 deaths per 1,000 live births in 1988-1992 to 76 deaths in 2000-2004. Similarly, the under-five mortality rate (U-5) has decreased from 234 deaths per 1,000 live births in 1988-1992 to 133 deaths in 2000-2004.

Figure 1.11. Trends in Infant and Under-five Mortality, 1992 to 2004



Sources: 1992, 2000, and 2004 Demographic and Health Surveys.

38. The 2004 MDHS data show that 64 percent of children age 12-23 months has received the full series of recommended vaccinations, a decrease from 1992 and 2000 levels (82 and 70

¹⁴ The United Nations Children's Fund (UNICEF), World Health Organization (WHO) and United Nations Population Fund (UNFPA) provide an even higher estimate of maternal mortality in Malawi (adjusted for well-documented problems of underreporting and misclassifications) at 1,800 deaths for 100,000 live births in the year 2000.

¹⁵ The recent decline in childhood mortality has also been observed in neighboring countries (NSO and ORC Macro 2005).

percent, respectively).¹⁶ This is true for all types of vaccines. For example, BCG (vaccination against tuberculosis) coverage has decreased from 97 percent in 1992, to 92 percent in 2000, to 91 percent in 2004.

39. Nutritional status is an important human development indicator as it allows evaluation of the susceptibility of the population to disease, impaired mental development, and early death. In the MDHS surveys, the height and weight of children under age five were measured in order to estimate their nutritional status.¹⁷ Children's nutritional status in the 2004 MDHS is virtually identical to the status in 1992 MDHS and 2000 MDHS, indicating that there has been no improvement in the nutritional status of children under age five since 1992. As discussed in detail in Chapter Four, as many as 48 percent of children under five years of age in Malawi are stunted (too short for their age), and 22 percent are severely stunted. Five percent of children are wasted (or too thin), and 22 percent are underweight. These numbers are extremely high even for Sub-Saharan Africa, and underscore that child malnutrition remains one of the biggest development challenges facing Malawi.

MALAWI'S PROGRESS TOWARDS THE ACHIEVEMENT OF MILLENNIUM DEVELOPMENT GOALS

40. In this section we briefly discuss Malawi's progress towards the MDGs as of end-2005.¹⁸ Achievement of the targets for these goals will be monitored through a set of 48 indicators.¹⁹

41. In Malawi, the MDGs are to be achieved through implementation of the Malawi Poverty Reduction Strategy (MPRS, 2002-2005) and the Malawi Growth and Development Strategy (MGDS, 2006-2010), which express the country's overarching economic and development targets for poverty reduction. The overall monitoring of the MDGs is expected to be aligned under the Monitoring & Evaluation Master Plan launched in November 2004, which lays the basis for the monitoring of the MPRS and MDGS (see Chapter Eleven).

¹⁶ The World Health Organization guidelines for childhood immunizations call for all children to receive: a BCG vaccination against tuberculosis; three doses of the DPT vaccine to prevent diphtheria, pertussis and tetanus; three doses of polio vaccine (not considering polio given at birth); and a measles vaccination.

¹⁷ Three standard indicators of growth are used in this report. A child is considered stunted if he is too short for his age. Stunting indicates chronic under-nutrition, typically due to poor nutrition over an extended period. A child is considered wasted if s/he is too thin, i.e., weighs too little for his height. Wasting is an indicator of acute or recent nutritional deficits and is closely tied to mortality risk. Finally, a child is considered underweight if s/he weighs too little for his age. A child can be underweight for his age because s/he is stunted, wasted, or both. To allow standardized measurements over time and in different settings, height and weight data are routinely compared to a reference population. The World Health Organization (WHO) recommends using the child population data maintained by the NCHS (U.S. National Center for Health Statistics) as the reference. The status of a child with regard to stunting, wasting, and underweight is determined by how many statistical units, standard deviations, the child's measurements are below the mean of the NCHS reference population. If a child is between 2 and 3 standard deviations below the mean, the child is considered moderately malnourished (stunted, wasted, or underweight); if the child is 3 or more standard deviations below the mean, the child is considered severely malnourished.

¹⁸ Malawi is one of the countries that signed the Millennium Declaration that was adopted in September 2000. The Millennium Development Goals (MDGs) commit countries to an expanded vision of development that promotes human development as key to sustaining social and economic progress, and recognizes the importance of creating a global partnership. The Declaration outlines eight (8) goals and eighteen (18) targets to be achieved by the year 2015. Achievement of these targets will be monitored through a set of 48 indicators.

¹⁹ For a full list of goals, targets and indicators the reader is referred to: <http://www.un.org/millenniumgoals/>

42. Malawi has completed one report on the progress towards the MDGs in 2003.²⁰ The report highlighted that Malawi was falling short in a number of ways towards reducing poverty and advancing other human developments. The work done in 2003 has been updated using results from MDHS 2004 and the IHS2 2005, and detailed results are presented in Annex 1F. The update is not comprehensive, in that it does not attempt to analyze the progress on every indicator. Only those indicators for which new data is available have been covered. A summary of progress towards the MDGs is provided in Table 1.6. Below we briefly discuss progress towards the MDGs 1 to 7.

43. Malawi is unlikely to meet Goal 1 (to eradicate extreme poverty and hunger). In fact, as discussed in this chapter, little progress has been made in reducing poverty levels and ultra-poverty over the past decade. Similarly, progress towards Goal 2 (to achieve universal primary education) has been limited. While Malawi has improved its GER ratios in primary education, the NER remains at around 80 percent. More important only 60 of children who start school actually complete a full course of primary education (see Chapter Two). Little progress has also been made in achieving Goal 5 (to improve maternal health). As discussed above, maternal mortality actually increased between 1992 and 2000, but has recently begun to diminish. The current rate of reduction is not rapid enough to meet this MDG by 2015, however.

44. Malawi could reach Goal 3 (to promote gender equality and empower women). Notably, good progress has been made in reaching equality of enrollment in primary education and in reducing gender disparity in youth literacy. More progress is needed in reducing the gender gap in higher education, however, and also in increasing women participation in the workforce and in position of authority. Similarly, good progress has also been made towards achieving Goal 4 (to reduce child mortality), with under-five mortality projected to decrease by more than two-thirds, between 1990 and 2015.

45. Some progress has been made in reaching Goal 6 (to combat HIV/AIDS, malaria and other diseases). Notably, Malawi appears to have halted and begun to reverse the spread of HIV/AIDS, and has begun to reverse the incidence of malaria, by increasing the proportion of population using effective malaria prevention. Finally, mixed progress has been made in achieving Goal 7 (Ensure environmental sustainability). Deforestation is continuing at an alarming rate, and the proportion of population using solid fuels remains very high. On a more positive note, the proportion of people who have access to safe drinking water and improved sanitation has increased significantly.

46. In sum, Malawi is well placed to achieve three of the MDGs by 2015, provided additional progress is made. Achieving the other MDGs by 2015 looks unlikely.

²⁰ Government of Malawi and UNDP (2003) “Malawi Millennium Development Goals Report 2003”.

Table 1.6: Summary of Malawi's progress towards the MDGs as of end-2005

	Baseline 1990-1992	Intermediate 1998-2000	Most Recent 2004-2005	MDG Target for 2015	Target feasibility
Goal 1: Eradicate extreme poverty and hunger					
Target 1: Halve, between 1990 and 2015, the proportion of people under the poverty line (Indicator 1)	54.0	53.9	52.4	27.0	Unlikely
Target 2: Halve, between 1990 and 2015, the proportion of people who suffer from hunger (under the ultra-poverty line, Indicator 5)	28.0	25.4	22.2	14.0	
Goal 2: Achieve universal primary education					
Target 3: Ensure that, by 2015, children everywhere, boys and girls alike, will be able to complete a full course of primary schooling (completion rate, Indicator 7)	-	69.0	60.0	100.0	Unlikely
Goal 3: Promote gender equality and empower women					
Target 4: Eliminate gender disparity in primary and secondary education, preferably by 2005, and to all levels of education (Gender ratio in primary, Indicator 9a)	0.9	0.9	1.0	1.0	Potentially Feasible
Goal 4: Reduce child mortality					
Target 5: Reduce by two-thirds, between 1990 and 2015, the under-five mortality rate (Indicator 12)	234.0	189.0	133.0	78.0	Potentially Feasible
Goal 5: Improve maternal health					
Target 6: Reduce by three-quarters, between 1990 and 2015, the maternal mortality ratio (Indicator 16)	620.0	1120.0	960.0	155.0	Unlikely
Goal 6: Combat HIV/AIDS, malaria and other diseases					
Target 7: Have halted by 2015 and begun to reverse the spread of HIV/AIDS (HIV prevalence among 15-24-year-old pregnant women, Indicator 18)	17.4	24.1	15.3	<17.4	Potentially Feasible
Target 8: Have halted by 2015 and begun to reverse the incidence of malaria and other major diseases (Proportion of population in malaria risk areas using effective malaria prevention (percent of under five children using bednets, Indicator 22a)	-	-	-	-	
Goal 7: Ensure environmental sustainability					
Target 9: Integrate principles of sustainable development into country policies and programmes and reverse loss of environmental resources (Proportion of forested land area, Indicator 25)	34.7	27.2	-	-	Unlikely
Target 10: Halve, by 2015, the proportion of people without sustainable access to safe drinking water (Indicator 30)	47.0	62.0	66.1	73.5	
Target 11: By 2020, to have achieved a significant improvement in the lives of at least 100 million slum dwellers (Proportion of households with access to secure tenure, Indicator 32)	95	91.0	-	87.7	

Source: Authors based on various data (see Annex 1F for details).

CHAPTER 2: POVERTY PROFILE AND THE DETERMINANTS OF POVERTY

INTRODUCTION

1. While a large share of Malawi's overall population is poor, this population is still a diverse group with diverse problems and conditions. This chapter adopts a multidimensional approach in the analysis of living conditions of the Malawian population. First, it identifies salient characteristics such as the demographic composition of a household, occupation of the household head, education levels, health and nutrition characteristics, quality of housing, asset ownership, and access to key infrastructure, to build a poverty profile for Malawi's poor in 2005. The chapter also briefly examines subjective assessments of well-being, and the extent to which such assessments are related to income and non-income measures of poverty. Then it investigates the key determinants of poverty through a multi-variate analysis

THE CHARACTERISTICS OF POOR HOUSEHOLDS IN 2005: THE POVERTY PROFILE

2. The poverty profile seeks to determine which household characteristics are highly correlated with poverty, and what types of households are very likely to be poor. To this end, this section will explore the demographic composition of households as well as key differences in education, health, water and sanitation, housing quality, durable assets, land holdings, and livestock. The chapter builds on the "Profile of Poverty in Malawi, 1998: Poverty analysis of the Malawi Integrated Household Survey, 1997-98" produced using the IHS1 household data by the then National Economic Council (NEC 2000).¹ It is also useful to focus on the characteristics of the ultra-poor, to inform policy interventions to alleviate extreme poverty. As highlighted in this chapter, and also in Chapter Three, most of the key characteristics remain the same, even though the profile of the ultra-poor is not fully identical as the poor's.

Demographic characteristics of poor households: household size and dependency ratio

3. Malawi has a very young and rapidly growing population. Malawi's total population in 2005 was estimated at 12.3 million, of which about 60 percent is under the age of 20 and about 75 percent is under the age of 30. The total population is expected to increase rapidly over the next few decades, reaching around 20 million by 2025 (Box 2.1).

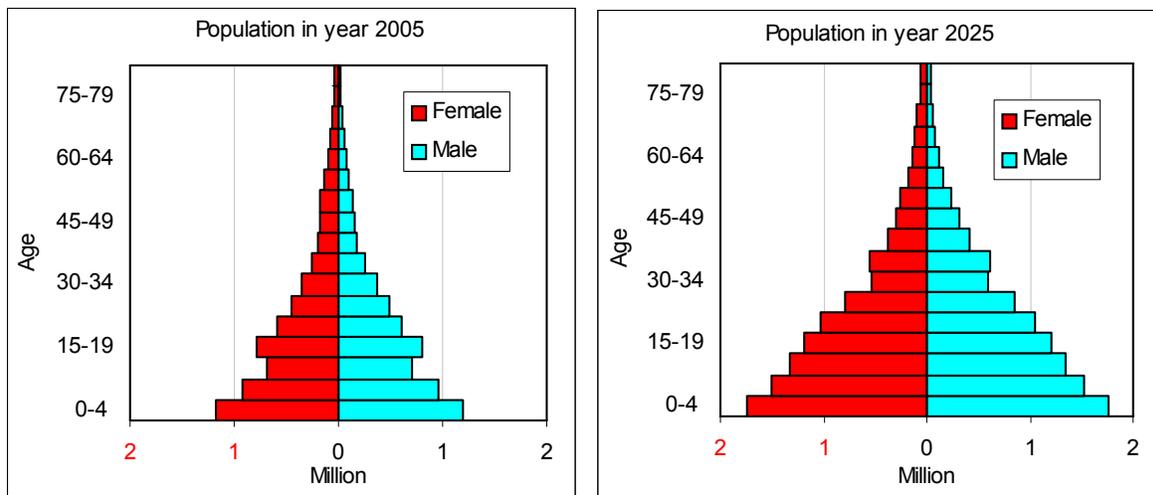
4. The rapidly growing population is a key driver of Malawi's persistent poverty. Poor households in Malawi are generally larger than non-poor households, averaging 5.4 members compared to an average of 3.8 members in non-poor households (Table 2.1). When looking at average household size by income decile, the relationship is even clearer—households in the poorest decile are more than twice as large as households in the richest decile (6.3 versus 2.9 members). Urban and rural households are similar in size, and male-headed households tend to

¹ Hereafter referred to as Poverty Profile 1998. The Poverty Profile 1998 cannot be used here for absolute comparisons because, as was explained in Chapter One, the methodologies used to calculate poverty are different. However, it is possible to look at the patterns reported in the Poverty Profile 1998 to determine if there are changes between the two surveys.

be larger than female headed households. Average households size is slightly higher in the North and Central regions (4.8 and 4.7 members, respectively) compared to the South (4.3 members).

Box 2.1: Malawi’s population demographic projections to 2025

Demographic breakdown of Malawi’s population by age and gender, in the years 2005 and 2025



Source: National Statistical office

5. Poor households tend to have a larger dependency ratio than non-poor households,² with, on average, a dependency ratio of 1.4 compared to non-poor households whose dependency ratio averages 0.8 (Table 2.1). When viewed by decile, the dependency ratio shows a steady decrease as households become less poor; the poorest decile has a dependency ratio (1.6) which is four times as large as the ratio for households in the richest decile (0.4). The difference is particularly large for poor households headed by females (Figure 2.1) Dependency ratios are similar for urban and rural households, though rural households have slightly higher dependency ratios.

Table 2.1: Household size, number of children, and dependency ratio by poverty status, 2005

	Household Size	Number of Children	Dependency ratio	
	Overall	Overall	Overall	Female Headed
Overall	4.5	2.1	1.1	1.4
Non-Poor	3.8	1.5	0.8	1.0
Poor	5.4	2.8	1.4	1.8

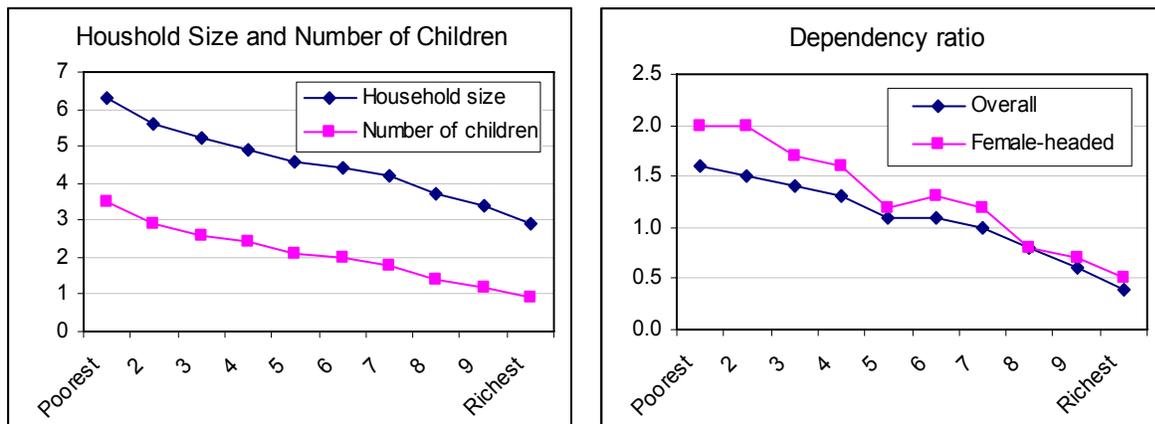
Source: National Statistical Office, IHS2

6. The differences in dependency ratio are largely driven by the number of children in the household. In Malawi, there are on average 2.1 children (aged 0 to 14 years) per household. Male headed households consistently have more children than female headed households. The

² The dependency ratio is defined in the standard way, as the ratio of the total number of persons in the household outside the economically active population (children under the age of 15 and adults above 65 years of age) to the total number of prime-age adults.

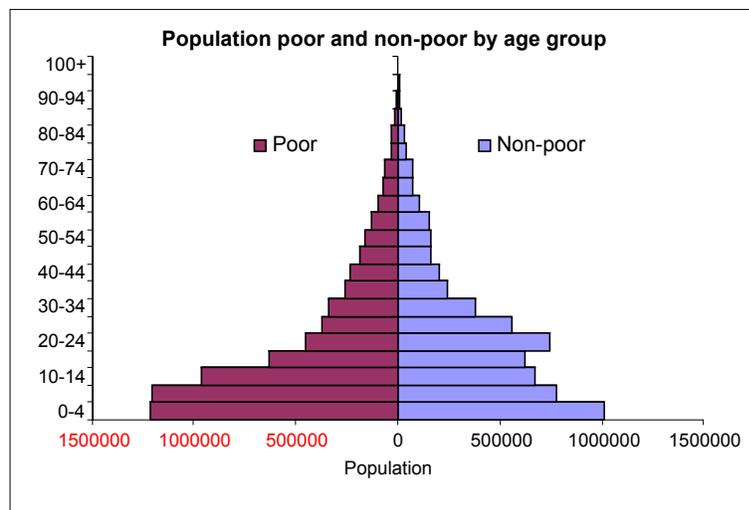
average number of children is highest in rural areas and in poor households: the average number of children in the poorest decile (3.5) is four times that of the richest decile (0.9). In line with these observations, while children make up 49.9 percent of the total population of Malawi, they account for 53.4 percent of the poor population. In other words, more than half of the poor in Malawi are children (Figure 2.2).

Figure 2.1: Household size, number of children, and dependency ratio, by decile, 2005



Note: Children are those between 0 and 14 years of age
 Source: National Statistical Office, IHS2

Figure 2.2: Demographic composition of poverty in Malawi, 2005



Source: National Statistical Office, IHS2

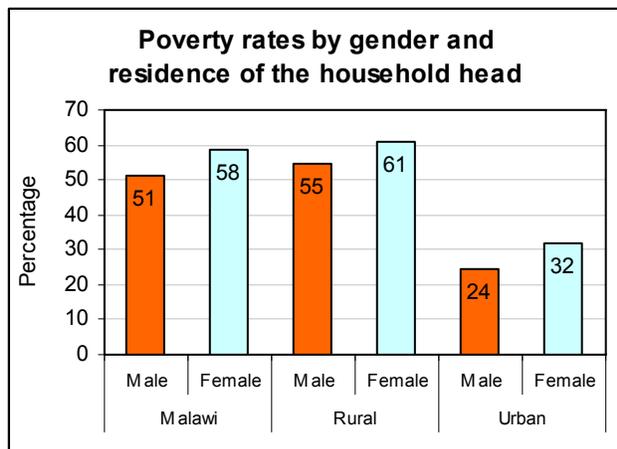
Key characteristics of the household head: gender, age and level of education

7. Poverty rates are higher in female-headed households in both urban and rural areas (Figure 2.3). About 51 percent of the people who live in male-headed households are poor, while 58 percent of people living in female-headed households are poor.³ People in households

³ Note that, while female headed households are disproportionately poor, the majority of the poor live in male-headed households. This is because the large majority of households in Malawi are male-headed (77 percent).

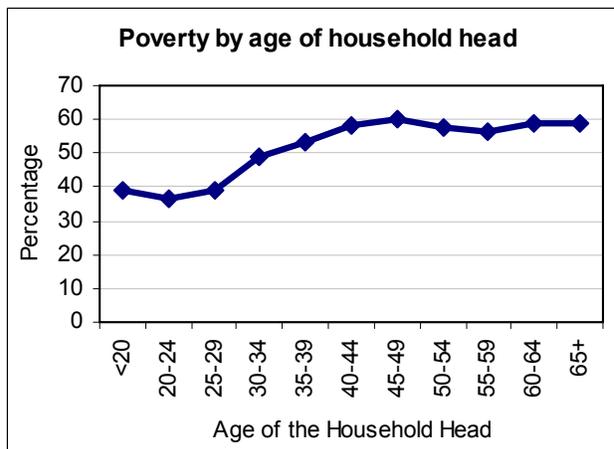
headed by older members consume less per capita per day than those with younger household heads, up to ages 44-49, when the relationship flattens off (Figure 2.4).

Figure 2.3: Population Poverty Rates by Sex of Household Head and Residence



Source: National Statistical Office, IHS2

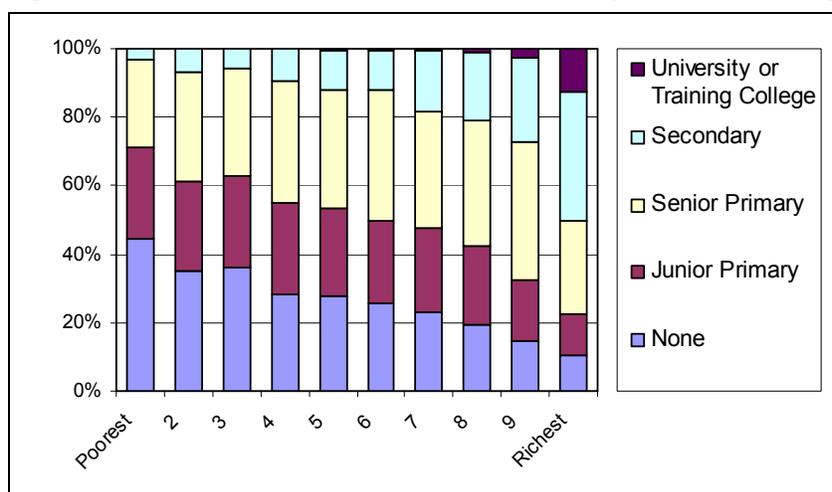
Figure 2.4: Population poverty rates by age group of household head



Source: National Statistical Office, IHS2

8. Overall, the average level of education of all household heads is low. About 28 percent of household heads have no education, and 55 percent have only primary education. These averages mask wide differences between urban and rural households, and across gender, however. In rural areas, 30 percent of household heads have no education compared to 9 percent in urban areas. On the other hand, as much as 47 percent of the population in urban areas has completed secondary education or higher

Figure 2.5: Education of Household Heads by wealth decile (percent)



Notes: Junior Primary is Standards 1-4, Senior Primary is Standards 5-8, Secondary is Forms 1-6.
Source: National Statistical Office, IHS2

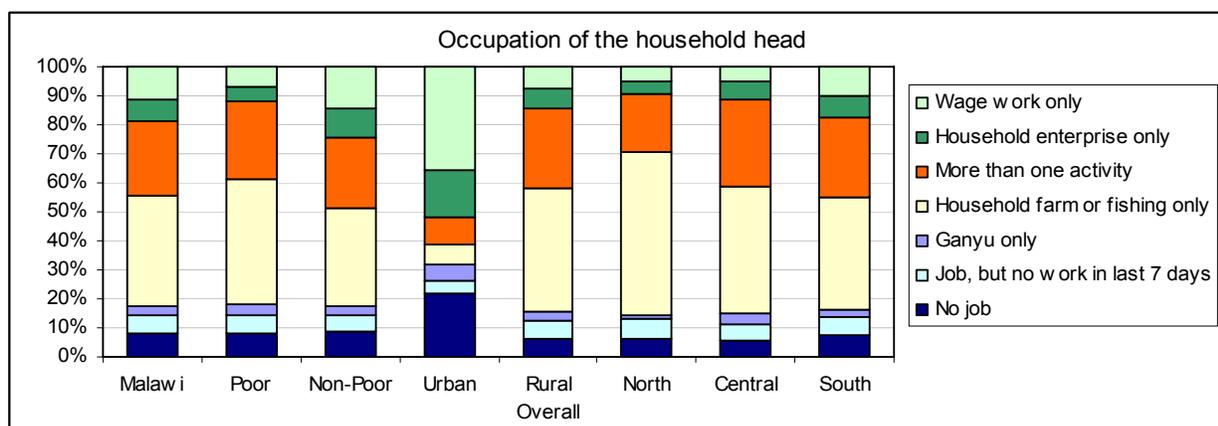
9. As shown in Figure 2.5, there is a high correlation between poverty and the level of education. Almost three-quarters of the household heads in the poorest decile have less than complete primary education compared to only 20 percent of the household heads in the richest decile. On the other hand, virtually all the household heads that received a degree at University or Training College belong to the top two deciles. The lack of education is much greater for female household heads, with 50 percent of the female heads without any education.

10. In sum, poor households tend to be larger than non-poor, have higher dependency ratios, and a greater number of children. They also tend to be headed by persons with little or no education. Female headed households are disproportionately poor. These demographic characteristics of poor households are similar to those identified in the 1998 Poverty Profile.

Occupation of the Household Head⁴

11. Very few household heads work at a wage or salaried job that can be easily identified by occupational classifications. Hence, this analysis focuses on responses of household heads to questions about how they spent hours in the last 7 days.⁵

Figure 2.6: Occupation of the Household Head



Note: See Footnote 21 for more information about these categories
 Source: National Statistical Office, IHS2

12. Figure 2.6 depicts a breakdown by occupation of the head of household. Most household heads report working only on their household farm or fishing activity (38 percent). As expected, this is more common in rural areas, reaching a peak of 55 percent in the North Region. Female household heads are also more likely to work solely on the household farm (45 percent, not

⁴ If we use the International Labor Organization (ILO) standard definition of employment, 96 percent of all household heads are employed. This figure masks the actual employment situation of heads of households. To identify the employed according to the ILO definition, the respondent: (a) worked at least one hour in the last 7 days or (b) the respondent had a job to return to if they did not work in the last 7 days.

⁵ These categories are taken from questions regarding the number of hours worked during the past 7 days on (i) household agricultural activities or fishing; (ii) non-agricultural or non-fishing household business for self; (iii) non-agricultural or non-fishing household business for other household member; (iv) casual, part-time or *ganyu* labor; or (v) work for a wage, salary, commission or payment in kind (excluding *ganyu*); or (vi) the respondent had a job to return to if they did not work in the last 7 days.

shown). The second largest group is formed by those who report working in multiple jobs (26 percent). Most of these individuals are farmers who work at additional jobs (94 percent of the total). The third largest group of household heads works solely at a waged or salaried job (11 percent). These wage workers are found predominantly in urban areas, where they account for 35 percent of all urban household heads. In rural areas this proportion is about 8 percent. Finally, a few heads of households work solely in a household enterprise owned by themselves or other members of the household (8 percent). This is more common in urban areas (16 percent) than in rural areas (7 percent). Of the household heads who own a household enterprise, 50 percent are in Wholesale and Retail Marketing and 26 percent are in Manufacturing.

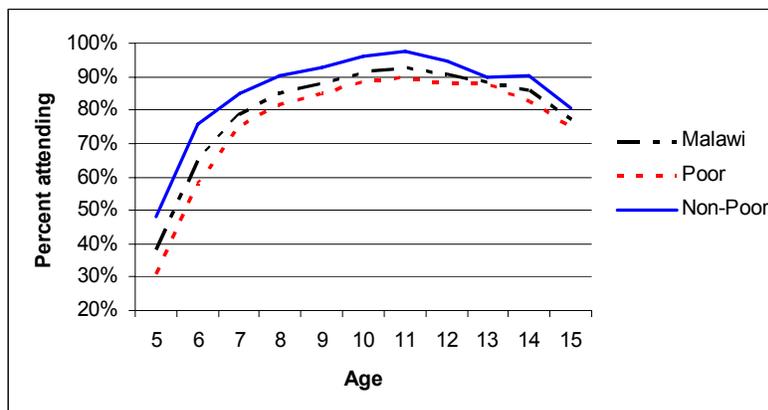
13. In sum, the occupation of the household heads from poor households is characterized by a larger reliance solely on the household farming or fishing activity, and by a lower likelihood of working on a wage or salaried job, and of working in a household enterprise. This implies a heavy reliance on agriculture for employment and/or subsistence farming.

Education and the poor: school attendance, and enrollment in primary, secondary, and tertiary education, and literacy rate

School Attendance

14. As shown in Figure 2.7, at all ages, poor children are less likely to be attending school than their non-poor peers. This gap is largest at young ages. For example, for children ages 5-6, those from non-poor households are 40 percent more likely to be attending school than poor children. School attendance for both poor and non-poor children increases up to about age 12, and then attendance rates start to decline. After controlling for other differences, female-headed households spend a larger share of their total budget on education, suggesting that female heads are significantly more likely to send children to school (see Annex 2A)

Figure 2.7: School attendance by poverty status



Source: National Statistical Office, IHS2

Enrollment in primary education⁶

15. The primary education Gross Enrolment Rate (GER) provides an indicator of the capacity of the primary education system.⁷ Consistent with previous estimates, the GER in Malawi is quite high at 108 percent (Figure 2.8). It should be noted that a high ratio does not necessarily indicate a successful education system, since the large number of pupils could be the result of grade repetition, as well as overage and underage enrolments.⁸ The rate for boys is higher than

BOX 2.2: CHILD LABOR IN MALAWI

Working children have less opportunity to attend school and are more susceptible than adults to bad work environments, such as low or no pay, poor working conditions, and physical abuse. The 2005 IHS2 collected information on the work activities of children age 5-14. They were asked a series of questions about whether they were doing any kind of work, whether they did unpaid family work on the farm or in a family business, and whether they regularly helped with household chores.

As in many developing countries, child labor is common in Malawi. About 35 percent of children work either for the family business or farm, or work for a non-relative (paid or unpaid), or spend 4 or more hours a day doing household chores. Overall, older children and children in rural areas are more likely to be working. Girls are more likely than boys to do domestic work. The table below shows that approximately 3 percent of children age 5-14 work for persons who are not members of their household (paid or unpaid). Among children who help around the house with household chores, 40 percent of children do these chores for an average of less than 4 hours per day and 4 percent work for 4 or more hours per day.

Percentage of children who are currently working by type of employment and selected background characteristics in 2005

Background characteristics	Work for non-household member (A)	Domestic work		Currently doing work on family farm or family business (C)	Currently working (A+B+C)
		Less than 4 hours per day	4 hours or more per day (B)		
Children (age 5-14)	2.7	39.7	4.0	28.4	35.0
<i>Age</i>					
5-9	0.8	27.0	1.8	14.6	17.2
10-14	5.0	54.2	6.3	44.4	55.7
<i>Sex</i>					
Male	3.0	27.0	1.7	30.4	35.1
Female	2.5	52.4	6.1	26.6	35.2
<i>Residence</i>					
Urban	1.0	40.3	8.5	5.2	14.7
Rural	2.9	39.6	3.4	31.0	37.3
<i>Region</i>					
North	1.4	32.7	2.8	37.1	41.3
Center	3.8	42.7	2.9	30.9	37.6
South	2.0	38.6	5.3	23.7	31.0
<i>Poverty Status</i>					
Non-Poor	2.4	41.8	4.2	25.8	32.4
Poor	2.9	38.4	3.8	30.0	36.7

Source: National Statistical Office, IHS2

Notes: Work for non-household member is any child who worked for 0-60 hours for *ganyu* or for a wage. Domestic work includes cooking, doing laundry, cleaning house, collecting water, and collecting firewood or other fuel materials. Work on family farm or business is any child who worked for 0-60 hours on household agricultural activities, on own non-agricultural or non-fishing household business, or on non-agricultural or non-fishing household business of any household member.

⁶ The IHS2 questionnaire asked attendance and not enrollment so these figures are actually attendance and not enrollment. The rates are calculated for children attending school in the 2004 and 2005 academic years combined.

⁷ The primary GER is defined as the total enrolment in primary education regardless of age, expressed as a percentage of the official school age population (6 to 13 years).

⁸ For a discussion, see World Bank (2004).

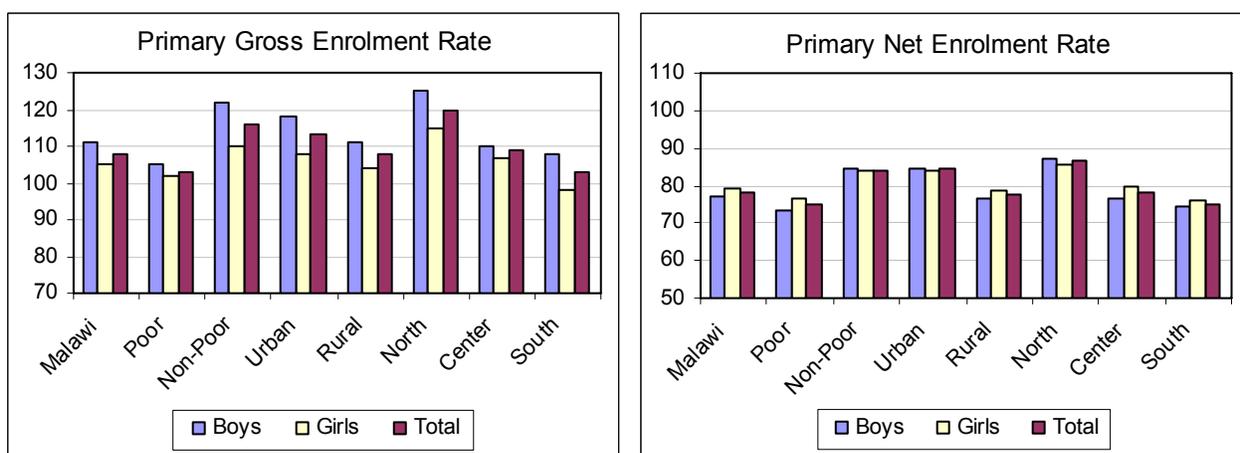
for girls, and the rate for urban areas is higher than for rural areas. However, these differences are not very large. The largest gap is between poor and non-poor households. In fact a boy from a poor household is less likely to be in school than a girl from a non-poor household.

16. Similarly, the primary education Net Enrolment Rate (NER)⁹ is higher for children from non-poor households (84 percent) than their peers in poor households (75 percent). Surprisingly, the girls have slightly higher NER than boys (79 percent and 77 percent, respectively), suggesting that there is no bias against girls enrolment in primary school. On a less positive note, the higher NER also reflects the fact that girls leave school earlier than boys, resulting in less completed years of schooling.

17. The results in the Poverty Profile 1998 show very similar NER, but much larger GER. However, because we do not know exactly how the rates were calculated for the 1998 poverty profile, comparisons must be made with caution.

18. There are large differences in NER and GER across the three rural regions (Figure 2.8). The North Region has the largest NERs and GERs of all the rural regions, with the Central Region and South Region being roughly equivalent. The differences in regional enrolment rates were already highlighted in the 1998 Poverty Profile, and also in numerous studies on education in Malawi. The reason for these differences remains unclear, however.

Figure 2.8: Primary Gross Enrolment Rate in 2004-2005 (percent)



Note: Includes all students attending Standard 1 through 8 in 2004 and 2005.
Source: National Statistical Office, IHS2

19. In Malawi, about 25 percent of school age children from poor households do not enroll in primary education. According to IHS2 respondents, lack of money is the major reason for

⁹ The NER is defined as the percentage of the official children population of primary school age that is enrolled in primary school. The NER excludes overage students in an attempt to capture accurately the system's cover and internal efficiency. It does not solve the problem completely since some children fall outside the official age simply because of late or early entry rather than grade repetition. Simply put, the NER reflects the percent of children of official primary school age who actually attend primary school.

failing to enroll (about 41 percent of children who never enrolled).¹⁰ A further 10 percent report that the parents prevented the child from going to school or that their help was needed at home.

20. Further, while the primary enrollment rates are high by regional standards, very few children actually complete primary school (World Bank 2004). The 2002 DHS EdData survey indicates that the grade 1 drop out rate was 8 percent for males and 9 percent for females. Similarly, the drop out rate for grade 8 was 20 percent for males and 21 percent for female. As a result, in 2002 only 60 percent of primary school students who entered grade 1 could be expected to reach grade 5, with or without repetition, and only 39 percent of those who entered grade 1 could be expected to reach grade 8 (DHS EdData 2004).

21. According to IHS2 respondents, again the cost of schooling is the major cause for the high rates of drop out in primary education. As many as 49 percent of students report lack of money for fees and uniforms as the major cause of primary school drop out. Reported lack of interest in continuing education is also common (24 percent). Early marriage or pregnancy account for 9 percent of drop outs. A further 6 percent reports that the parents forced the child to stop and that their help was needed at home.

*Enrollment in secondary education*¹¹

22. Although 66 percent of children of secondary school age (14 to 19 years of age) are attending school, only 22 percent were attending secondary level school (while the balance were attending primary school, which is one of the causes of the high Primary Gross Enrollment Rate). In fact secondary gross and net enrollment rates are low (at 22 percent and 15 percent, respectively). The disparity in secondary enrollment rates is very large between poor and non-poor students and between urban and rural students. Three times as many non-poor students as poor students are enrolled in secondary education and boys and girls from the richest decile are 10 times as likely to attend secondary school compared to those in the poorest decile (Figure 2.9). Three times as many urban students as rural students are enrolled in secondary education. Differences in GER across rural regions are also substantial, with the North Region far above the South and Central regions. The regional differences become very small when looking at NER, indicating that there may be more repetition of grades in the North Region.

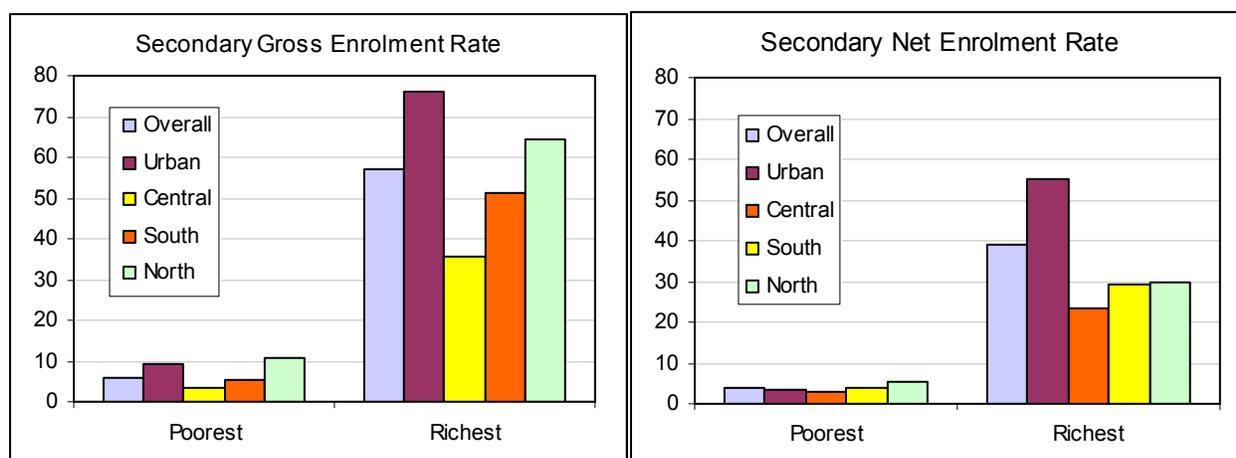
23. According to IHS2 respondents, lack of money is by far the most common reason for not continuing to secondary education (58 percent). Early marriage and pregnancy are also common (15 percent), and lack of interest (13 percent).

24. Secondary Net and Gross Enrollment Rates are not presented in the Poverty Profile 1998, but the information that is provided suggests that only a very small percentages of the population attended secondary school.

¹⁰ While tuition fees have been eliminated in Malawi's public primary schools, parents still require money for each child's attendance to meet the costs of the uniforms, the school's development fund, maintenance of teacher's house and school blocks, school report production, and the construction of pit latrines.

¹¹ As for primary education, the IHS2 questionnaire asked attendance and not enrollment so these figures are actually attendance and not enrollment. The rates are calculated for children attending school in the 2004 and 2005 academic years combined.

Figure 2.9: Secondary Gross Enrollment Rate by Wealth Decile (richest and poorest), 2004-2005 (percent)



Source: National Statistical Office, IHS2

Enrollment in tertiary education

25. Enrollment in tertiary education is very small (less than 0.1 percent of Malawi's population) and is associated almost exclusively with the households from the richest decile.¹² Of those enrolled in tertiary education, the vast majority live in urban areas.

Literacy Rate

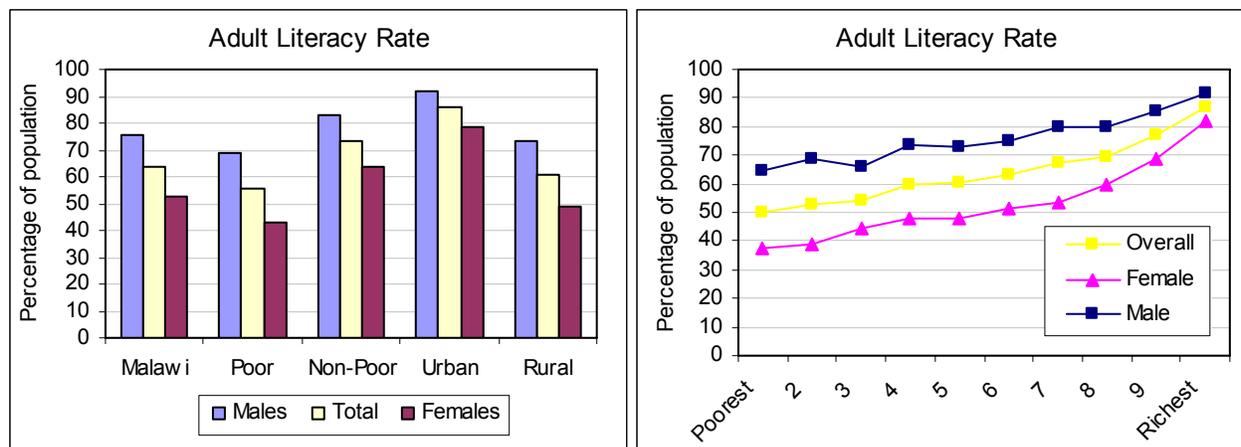
26. The adult literacy rate is defined as the percentage of individuals aged 15 years and older who can, with understanding, both read and write a short, simple statement about their everyday life. As shown in Figure 2.10, the national adult literacy rate is low at 64 percent, and is substantially higher among males (76 percent) than females (53 percent). Further, the likelihood of being literate is higher for individuals residing in urban areas, and is also higher in non-poor households. The results by decile again highlight the relationship between poverty and education. Overall, only about half of the adults in the poorest decile are literate, compared to 87 percent of adults in the richest decile. The gender gap in literacy decreases steadily with income, but even in the richest decile the literacy rate for females is 10 percent lower than males.

27. The youth literacy rate (calculated on individuals aged between 15 and 24 years) is 76 percent, well above the adult literacy rate. Though a rural-urban gap in literacy remains, there is much less disparity between young females and males, with 97 literate female youth to every 100 male youth. The youth from non-poor households are more likely to be literate (83 percent) than

¹² The IHS2 reports few students currently in tertiary education, and few individuals with a tertiary education. Less than 60 respondents reported being enrolled in University or Training College in 2004 or 2005. Overall, less than 1 percent of the respondents report having attended University or Training College. Hence the data must be used with caution because of the very small population.

from poor households (70 percent), though this gap too has closed substantially when compared to the adult literacy rates.

Figure 2.10: Adult Literacy Rate (percent)



Note: Literacy rate is defined as individuals who can read and write in their mother tongue or in English. Adults include all individuals aged 15 years and older. Source: National Statistical Office, IHS2

Health and the poor: morbidity, births attended by skilled health personnel, chronic health problems, and child malnutrition

Morbidity

28. Almost 26 percent of the population reported suffering an illness or injury in the last two weeks (prior to answering the IHS2 survey). Interestingly the non-poor population is more likely to report an illness (28 percent) than the poor population (24 percent). This is mainly true in rural areas. However, it should be emphasized that this is self-reported illness, and the poor may have higher thresholds before classifying themselves as ill. Most respondents reporting an illness said that they had a fever or malaria (30 percent overall, 39 percent urban and 30 percent rural). The second most common illness is lower respiratory complaints (16 percent overall, 14 percent urban and 16 percent rural). In all, fewer urban dwellers (16 percent) than rural dwellers (27 percent) reported suffering illness or injury. The Poverty Profile 1998 found similar results; more non-poor than poor reported suffering an illness or injury, and the most common illness reported was fever.

Chronic Health Problems

29. The proportion of individuals suffering from chronic illnesses is highest among the non-poor (Figure 2.11). As chronic illness is self-reported and not necessarily assessed objectively by a medical practitioner, it may not capture a person's actual health status.¹³ The results also

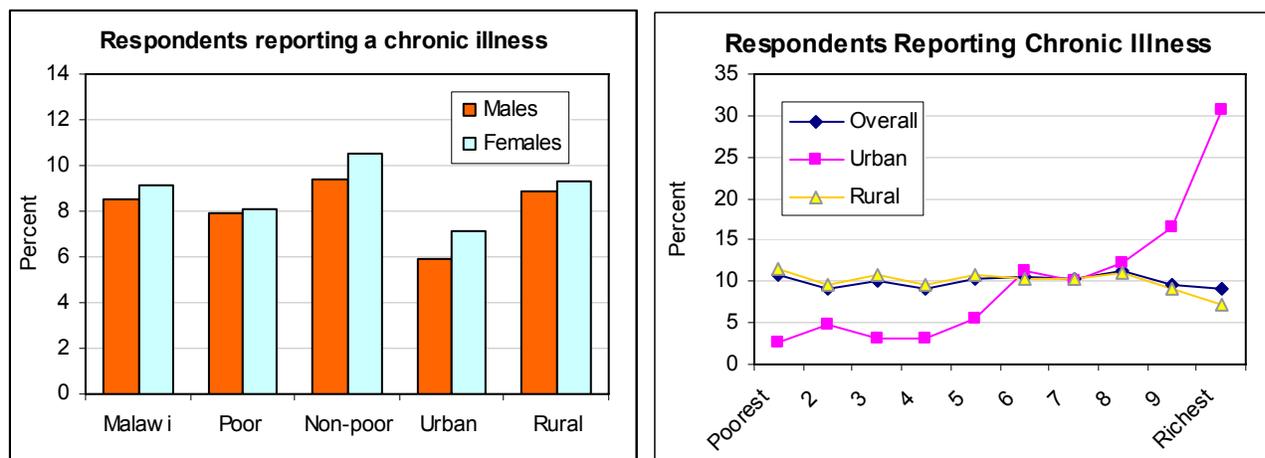
¹³ Reporting of chronic conditions may be higher among those who have access to health services (and have a heightened perception of their health status). Conversely, low income people may not be able to afford to stop

show that for both poor and non-poor, more women report having a chronic illness than men, and that there are more chronically ill individuals in the rural areas than in the urban areas. By decile, the proportion of respondents reporting chronic illness is approximately 10 percent for each decile. Interestingly in the bottom 5 income deciles, much less urban respondents report having a chronic illness compared to rural respondents. However, this relationship is inverted in the richest two deciles, and as many as one-third of urban respondents in the richest decile report suffering from a chronic illness.

Births Attended by Skilled Health Personnel

30. Births attended by skilled health personnel are defined as births that were attended by a doctor, clinical officer and nurse or mid-wife.¹⁴ Births by women from non-poor households are more likely to be attended by skilled health personnel (compared to births from poor households). The results also show a marked difference by decile. While only about half of women in the first decile used skilled health personnel, almost three-fourths of women in the highest decile used skilled health personnel. The results of the survey also indicate that there is a large difference between births in urban (85 percent) and rural (56 percent) areas being attended by skilled health personnel. With a few exceptions, at least 80 percent of women in urban areas in every decile used skilled health personnel while fewer than two-thirds of rural women, regardless of region, used skilled health personnel. The difference might be due to a higher rate of births attended by traditional births attendants in rural areas. It might also be due to the greater distance to health centers and the lower number of qualified staff in rural health centers. In rural areas, the Central Region shows the least use of skilled health personnel in all deciles.

Figure 2.11: Proportion of Persons Reporting Having a Chronic Illness



Source: National Statistical Office, IHS2

working to seek treatment, leading them to under-report health. Of all those who self-reported chronic ill health, approximately 60 percent said that they had been diagnosed by a medical professional, with 40 percent indicating that the illness had been diagnosed by a traditional healer, household member or self-diagnosed. In urban areas, 77 percent of respondents reported they were diagnosed by a medical professional, compared to 58 percent in rural areas.

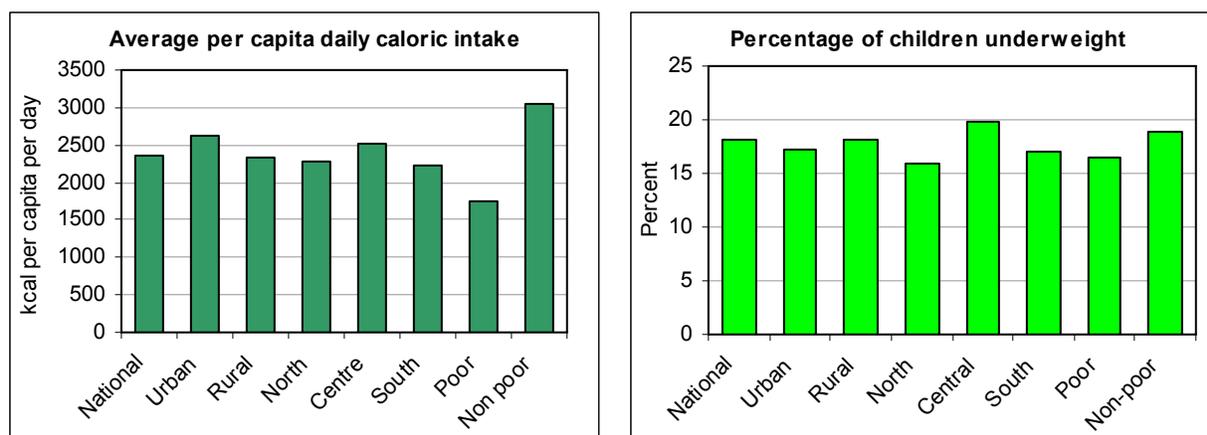
¹⁴ Traditional birth attendants (TBA) are not included in the definition of skilled health personnel because information on whether or not they were trained was not collected.

Caloric Intake and Child Nutrition Status

31. The average per capita availability of calories in 2005 was estimated at 2,366 kcal per day using the IHS2 data (Figure 2.12). The relatively low level of average per capita calorie availability in Malawi is compounded by an unequal distribution. The average per capita availability is 13 percent higher in urban areas than in rural areas. Urban dwellers have consistently higher caloric consumption than their rural counterparts in all regions. Looking at the regional composition, the figures are consistently higher in the Central region. Although it could be expected that poor households have lower levels of caloric consumption compared with better-off individuals, the magnitude of the difference is disconcerting: poor individuals consume on average 58 percent of the calories of their better-off counterparts.

32. The nutritional well-being of young children directly and indirectly contributes to the country's development. Child nutrition status is calculated using the height and weight measurements for children aged 6 to 59 months in the sample households of the IHS2. Prevalence of underweight children is the percentage of children under five years of age who are classified as undernourished according to the anthropometric index of nutritional status called weight for age.¹⁵ The results in Figure 2.13 show that 18.1 percent of children below five years of age are underweight. The results indicate there is not much difference in the prevalence of malnutrition in urban and rural areas. This indicates that the problem of malnutrition is spread nation wide.

Figure 2.12: Caloric Intake (daily kcal per capita) and Child Nutritional Status (percent underweight)



Notes: Moderate underweight are those children more than 2 standard deviations from the mean. Children include those children between 6 and 59 months of age.

Source: National Statistical Office, IHS2

¹⁵ Stunted children are those children with a low ratio of height for age. This indicates long-term or chronic malnutrition. Wasting children are those with low weight for height resulting from acute malnutrition, as in a situation of famine. Underweight children are those with low weight for age which is a combination effect of wasting and stunting. See Chapter Four for additional details.

33. Of particular interest is the apparent inconsistency in Figure 2.12 between calorie intake and nutritional status. This is most clearly seen in Central region, which has both the most calories per capita and the most underweight children. Higher calorie intake does not necessarily translate into lower levels of malnutrition, due to a host of reasons that will be discussed in Chapter Four.

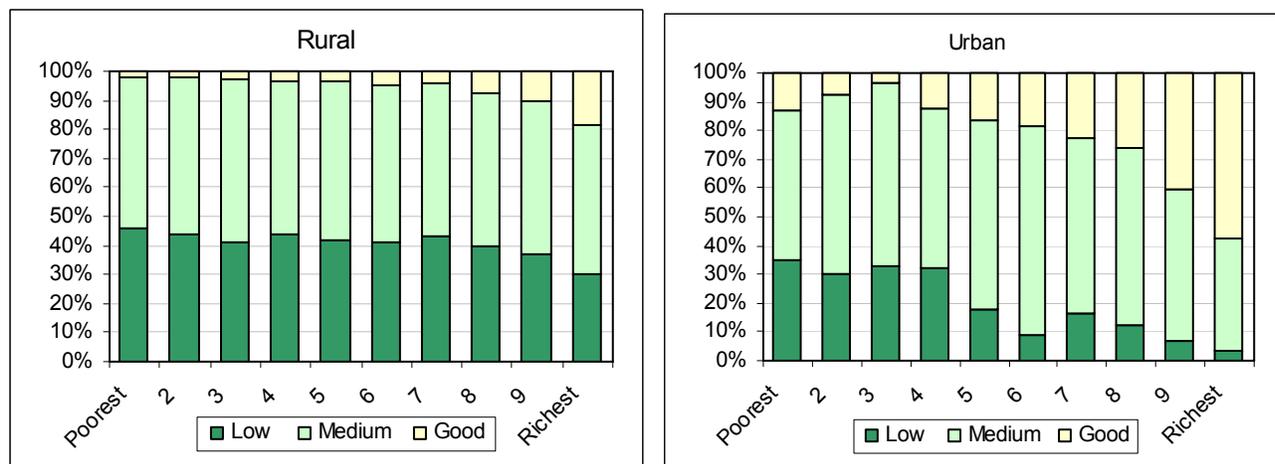
Housing: overall quality of the dwellings, sanitation, water, cooking fuel and lighting fuel

Quality of the dwellings

34. A housing quality index has been created by combining information on the various aspects of the dwelling: housing tenure, construction materials, outer walls, roofing materials, flooring materials, number of rooms, presence of electricity in the dwelling, presence of improved drinking water, type of toilet facilities, and method of garbage disposal.¹⁶

35. On average the overall quality score for all dwellings was 5.4, with urban dwellings receiving 7.4 points and rural households receiving 5.2 points. Slightly more than half of the dwellings in Malawi are of medium quality. This holds for poor and non-poor households in both urban and rural areas. In total, only 10 percent of the dwellings are classified as good quality in Malawi, and the majority of these are in urban areas where there is more access to services. The North Region has better dwellings than any of the other rural areas, while the Central Region has the worst (not shown).

Figure 2.13: Housing Quality by Wealth Decile and Location (percent)



Source: National Statistical Office, IHS2

¹⁶ The information for the housing index can be found in Module G of the IHS2 household questionnaire. Housing quality can be difficult to measure because of the general nature of the information collected in the questionnaire. For example, information is collected on the materials that make up the roof of the dwelling, but there is no assessment of the quality or condition of the roofing materials at the time of the interview. Points were assigned to each component to indicate their quality and summed for the household. The assignment of points for quality was based on the ranking used in the questionnaire. The total points per household ranged from 1 to 12. This was divided so that households with 1 to 4 points were designated as low quality, with 5 to 8 points as medium quality and with 9 to 12 points as good quality.

36. Non-poor households have a lower share of low quality dwellings and a larger share of good quality dwellings, than poor households. As expected, in urban areas, the share of good quality housing increases rapidly with wealth. Within rural households, however, the improvement in quality appears less marked and the shares of housing quality remain fairly constant across the bottom eight deciles (Figure 2.13).

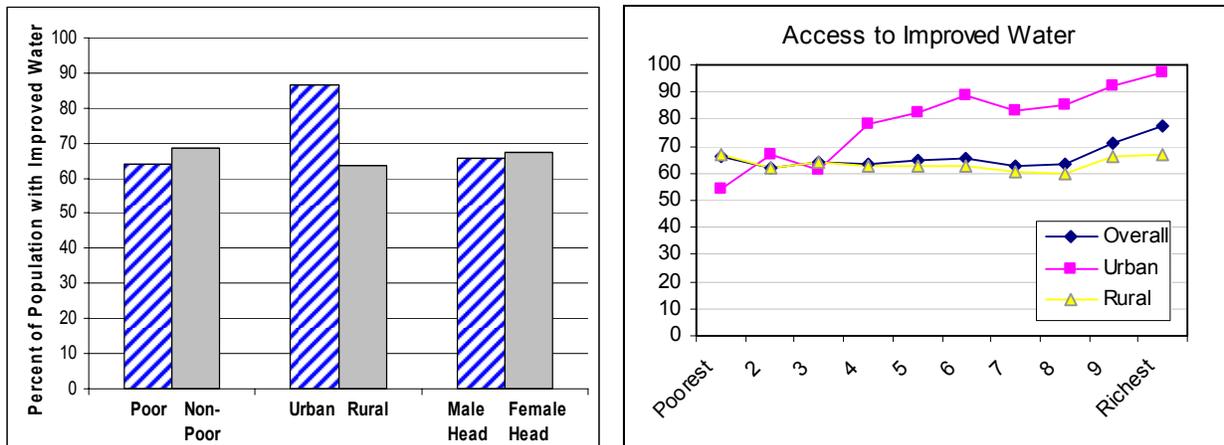
Presence of Improved Sanitation

37. Overall, 64 percent of the population has improved sanitation.¹⁷ The proportions are higher in non-poor households (71 percent), urban households (80 percent) and households with a male head (67 percent). Access to improved sanitation increases by wealth decile with about half of the population having improved sanitation in the lowest decile, compared to 80 percent in the highest decile. The North Region has consistently less access, with only about half of the population at each decile having improved sanitation. In the Central and South Regions, access improves from half in the lowest decile to 80 percent in the highest decile (not shown).

Presence of Improved Water

38. A household’s source of drinking water is important because potentially fatal and preventable diseases are prevalent in unprotected water sources. Figure 2.14 shows that while there is not much difference between the poor and non-poor in accessing improved water,¹⁸ the proportion is higher in urban than in rural areas. Two-thirds of the population in the lowest decile has access to improved water versus 78 percent in the highest decile. In fact, access to improved water increases by decile in urban areas, but stays constant in rural areas. Almost the entire urban population in the highest decile has access to an improved water source. For rural areas, the Central Region has the worst access while the South Region has the best (not shown).

Figure 2.14: Proportion of Population with Improved Water Source



Source: National Statistical Office, IHS2

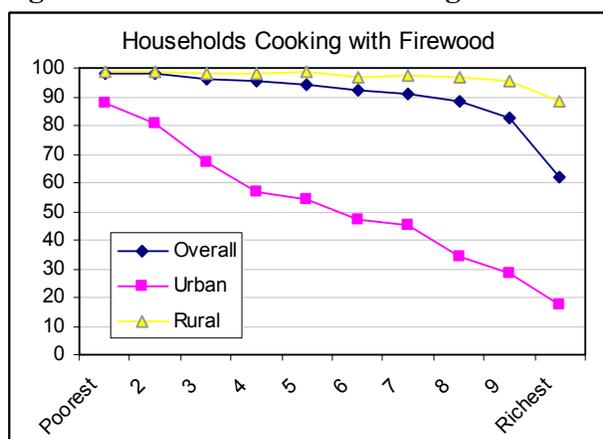
¹⁷ Improved sanitation has been defined as households who reported having flush toilets, Ventilated Improved Pit Latrines (VIP) or traditional latrines with a roof.

¹⁸ Improved water sources are defined as having the main source of water: piped into dwelling, piped outside dwelling (personal), communal stand pipe, personal hand pump, or communal hand pump.

Cooking Fuel

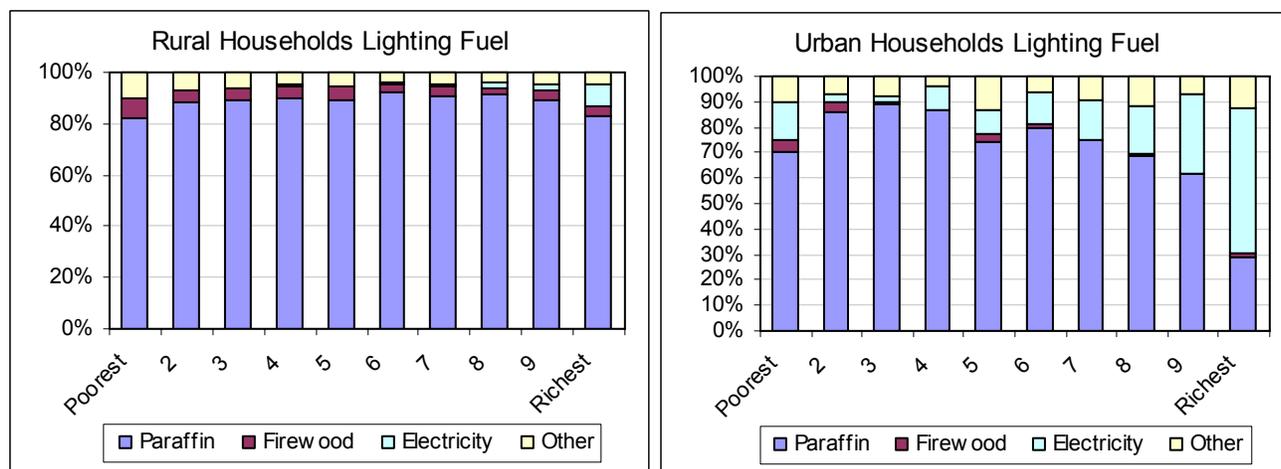
39. On average, about 90 percent of the population uses firewood, purchased or gathered, as their main source of cooking fuel. In rural areas, virtually every household uses firewood for cooking regardless of wealth (Figure 2.15). Only ten percent of the rural households in the richest decile use charcoal. In urban areas, fewer households use firewood as the income increases, from 90 percent in the poorest decile to only 20 percent in the richest decile. The other main fuel sources for urban households are charcoal (48 percent on average) and electricity (12 percent on average). The high use of firewood as cooking fuel probably contributes to the reporting of lower respiratory illness as the second largest reported illness (see above).

Figure 2.15: Households Cooking with Firewood by Wealth Decile (percent)



Source: National Statistical Office, IHS2

Figure 2.16: Household Lighting Fuel by Residence and Wealth Decile (percent)



Notes: Other includes grass, gas, battery, and candles.
Source: National Statistical Office, IHS2

Lighting Fuel

40. On average, 85 percent of households use paraffin for lighting, 4 percent use firewood, and 11 percent use other fuels. Use of paraffin is relatively constant by decile in rural areas, but decreases rapidly as income increases in urban areas. Only 59 percent of the households in the richest decile use paraffin, and this decreases to only 25 percent in urban areas. The other households are using “other” fuels, primarily electricity. Electricity is used in 6 percent of households overall for lighting, but for 33 percent of urban households.

BOX 2.3: BIOMASS AVAILABILITY AND POVERTY IN MALAWI

In Malawi, 90 percent of the poor live in rural areas and share space with forests and shrublands, and over 90 percent of the total energy demand in Malawi is met with biomass. As many as 96 percent of the poor use fuelwood as cooking fuel, of whom 55 percent collect from unfarmed community areas. As such, it is important to explore the extent to which poverty and forest degradation are interlinked. Scarcity could affect household wellbeing either directly, affecting income (from any limited sales of fuelwood and from labor re-allocation) or through its impact on household health or leisure. Annex 2B presents a regression model to study this issue in detail, using biomass as a proxy for fuelwood. The main findings are summarized below.

Our study estimated biomass availability in Malawi from satellite data. Malawi’s forests are mainly in the North region, with 41 percent of the country’s biomass, or 159 cubic meters, followed by the Central region with 38 percent of biomass. The South region has the least. Moreover, forest cover in all regions has decreased significantly, and particularly in the North, since 1990 when the Government conducted a Biomass Assessment.

Our analysis found that on average, a Malawian household spends the equivalent of MK2,558 per capita, per year on fuelwood, or about 12 percent of total annual consumption expenditure. 84 percent of all individuals who collected fuelwood were women. On average, active women spent 1 ½ hours on firewood collection, with little difference in collection times between regions and between rich and poor households.

The study suggests that average rural household consumption expenditure in Malawi declines after biomass reaches 26 cubic meters per hectare. 72 percent of rural households are in areas with biomass levels lower than this threshold. Thus, most of the rural poor would benefit if average biomass per hectare almost doubles. Though significant, the average effect of biomass on rural per capita consumption expenditure is, but small, however. We found that a 10 percent increase in current levels of biomass per hectare is associated with approximately 0.1 percent higher annual per capita consumption expenditure. This figure is twice as large in the south, where welfare would increase by 0.2 percent. Biomass scarcity also has a significant but small effect on the number of hours spent collecting fuel wood: a decrease in biomass of one cubic meter results in a one minute increase in collection time.

The small size of these effects suggests that households are using effective adjustment strategies to minimize their welfare loss from biomass scarcity.* Households use a range of strategies to cope with scarcity: planting trees, increasing the time allocated to collection while performing simultaneous tasks, sharing fires for cooking, improving fire management practices, preparing fewer meals or faster cooking foods, and using lower quality fuelwood.

These results may help explain why past efforts to increase fuelwood availability by encouraging community tree planting have been unsuccessful. Though Malawians perceive scarcity, given various constraints, households may choose not to use scarce land and labor to plant fuelwood tree crops. Thus a clearer understanding of household responses to scarcity may help policy makers target poverty eradication and biomass conservation strategies more effectively in Malawi.

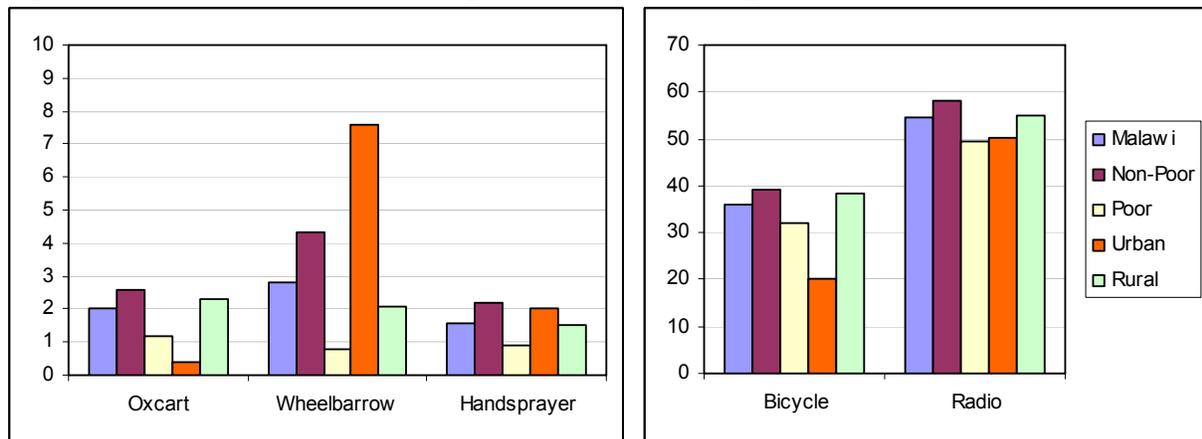
*Some caveats apply to these findings: the measure of biomass used is crude, and a more refined measure might help explain the biomass-welfare relationship better. Our measure of household welfare does not include other benefits such as biodiversity conservation and water catchment areas, which do not directly translate into higher annual household income. In addition, collection times were measured in half-hour units, which might be too large to capture time savings accrued by women.

Household assets: ownership of durable goods, livestock, land and labor

Durable Goods

41. Households with tangible assets can use those assets to improve their welfare, both by using the asset to help the household to work more efficiently and therefore increase income, or through the ability to sell off the assets when the household experiences a shock or there is a downturn in the economy. The IHS2 household questionnaire includes information that can be used to determine the amount of assets that is owned by a household. It includes common durable goods including household appliances, and farm implements, as well as information on land ownership and the existence of livestock. Figure 2.17 shows the distribution of selected assets.

Figure 2.17: Household Ownership of Selected Assets (percent of households)



Source: National Statistical Office, IHS2

42. Bicycles are one of the major means of transportation in Malawi. They are used to transport goods and people. Overall, only about one-third of all households in Malawi own bicycles. Ownership is lower in urban areas (20 percent) than rural areas (38 percent), which may be the result of more transportation options in urban areas. Ownership of useful farm implements such as an oxcart, wheelbarrow or handsprayer, is rare, with less than 3 percent of all households own these assets. For oxcarts, the North region and Central region show higher percentages of ownership than South region households. More households in the Central region have a handsprayer than households in either the North region or the South.

Livestock ownership

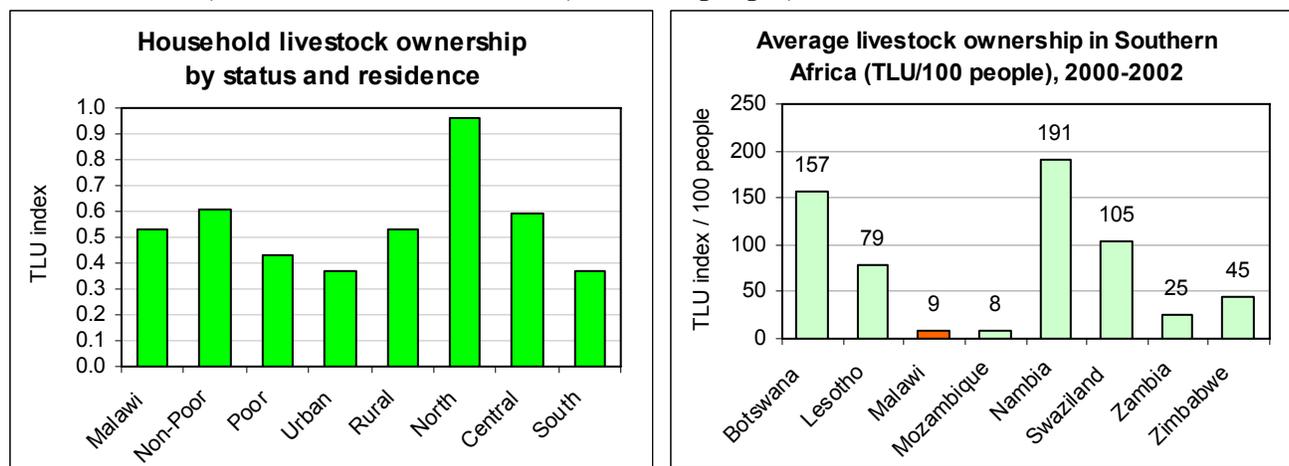
43. The concept of Tropical Livestock Units (TLU) provides a convenient method for quantifying a wide range of different livestock types and sizes in a standardized manner.¹⁹ In the IHS2, information was collected about cattle, oxen, goats, sheep, pigs, chickens and other

¹⁹ A TLU is a common unit used for describing livestock numbers of different species; this unit expresses the total amount of livestock present as a single value regardless of the specific composition. This is achieved by assigning conversion factors to different species to reflect their relative value.

poultry, and other non-specified livestock. Malawi has very low livestock ownership by regional standards. In 2005 the average TLUs in Malawi was 0.53 per household, or around 0.12 per capita (Figure 2.18). The non-poor have more TLUs (0.61) than the poor (0.43) and rural households have higher TLUs (0.53) than urban households (0.37). Households in the North region have the highest level of TLUs (0.96), a level which is three times higher than the South.

44. As expected, the TLUs increase by decile. There are a few exceptions, however. In urban households, there is no clear pattern except that the highest decile has the highest value of TLUs. This probably indicates that few urban households have the space needed to maintain livestock unless the household is wealthy enough to have land in rural areas as well. In the North region which has the highest average overall TLUs, the households in the 5th through 7th deciles have the largest TLU values, and the values for the higher deciles actually decrease.

Figure 2.18: Average Livestock Ownership in Malawi (TLU/household by household type and residence), and in Southern Africa (TLU/100 people)



Note: Tropical Livestock Units conversion factors: oxen=1.0; cattle=0.7; small ruminants (goats and sheep)=0.10; pigs=0.20; poultry=0.01; rabbits=0.01; turkeys=0.10
 Source: National Statistical Office, IHS2; and FAO GLiPHA (2003)

Land Holdings²⁰

45. In any country as highly agricultural as Malawi, ownership of land will play an important role in determining levels of poverty.²¹ Land holdings in Malawi are small: on average, excluding the landless, households have 1.2 hectares of land.²² When looking at land per capita, the average holdings are 0.32 hectares of land (Figure 2.19). Plot size per capita is highest in the North region where it reaches 0.41 per capita, while in the South and Central regions it is 0.29 and 0.33 hectares per capita respectively. Holdings of land per capita are almost twice as high for the non-poor households (0.40 hectares) than in poor households (0.23 hectares). Further, in

²⁰ The data presented in this section exclude the landless households.

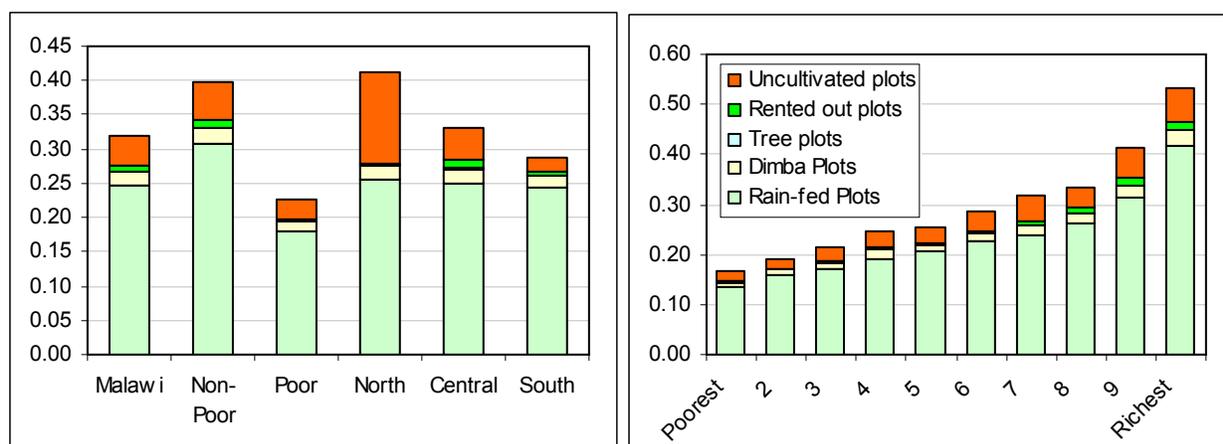
²¹ About 15 percent of households have no land holdings, largely in urban areas.

²² This calculation excludes landless households. Land categories include rain-fed plots, *dimba* plots, tree plots, plots rented out to others and uncultivated plots. *Dimba* gardens are pieces of land which due to proximity to some source of water (river or stream) retain moisture for most of the year, and can therefore be cultivated during the dry season.

the poorest decile land holdings are as low as 0.17 hectares per capita on average. Per capita land holdings increase as expected by decile, but even in the highest deciles, the average overall per capita land holding is only 0.53 hectares.

46. As can be seen in Figure 2.19, most of the per capita land holdings are in rain-fed land (Figure 2.19). Only few households have access to *dimba* plots. Interestingly some of the smallholder land remains uncultivated, especially in the top 20 percent of the population and in the North region.

Figure 2.19: Land Holdings: Average Hectares of Land Per Capita



Note: Excludes landless households.

Source: National Statistical Office, IHS2

Labor availability and use

47. The IHS2 survey provides detailed statistics on time use patterns in Malawi. Defining work broadly to include income-generating activities (including work on the household farm) as well as main household chores (including fetching firewood and water), we examined typical labor supply patterns. Details of the methodology used in this analysis are provided in Wodon and Beegle (2005).

48. Details of the distribution of hours of work according to the type of work performed, and the gender, age and location of the individual are provided in Annex 2C. The results indicate that rural individuals work longer hours than urban individuals, and women work more than men. The mean working time year-round nationally is 36.4 hours per week for the adult population (above 15 years of age) and a much lower 8.5 hours for children. In rural areas, where 88 percent of the population lives, the mean values are slightly higher.

49. As expected, adult men spend more time on the labor market than adult women, essentially because of a larger average amount of time given to salaried work, as well as casual, part-time and *ganyu* work and non-agricultural business-related work. On the other hand, the differences between adult men and women in terms of the time spent on agricultural work are more limited on average (all values in the tables include zero values). As for domestic work, it is performed mostly by women, and the same holds for the collection of wood and water. In total,

BOX 2.4: LABOR SHORTAGES DESPITE UNDEREMPLOYMENT? SEASONALITY IN TIME USE

The concept of time poverty can be used to measure the share of the population that works very long hours, and can therefore be considered as time-poor. In their paper on Guinea, Bardasi and Wodon (2005), consider a time poverty line of about 70 hours per week. A similar threshold has been used in our analysis to measure the share of the population working at least 70 hours per week. In rural areas, on an annual basis 5.2 percent of the adult male population works more than 70 hours per week, while the proportion is 10.3 percent for women (Annex 2C). Interestingly, there is no clear seasonal pattern in the share of the population working more than 70 hours per week, suggesting that the overall increase in working hours observed around December-January is likely to be provided by those household members that have a reserve of time at their disposal rather than by those who already work the most.

While a small share of the population in Malawi can be considered as time poor according to the data in Annex 2C, a larger share can be considered as underemployed, at least in the case of men. On an annual basis, 15.6 percent of adult males work less than 10 hours per week, and this proportion peaks to more than 20 percent in some months. For women, the proportion working less than 10 hours per week is much smaller. Importantly, we do see the impact of seasonality in this measure of underemployment, since the proportion of adults working less than 10 hours per week is lowest again in December. The corresponding data for children suggest a much larger share with a small burden of work, but also some cases apparently of very high workload.

Understanding the implications of these patterns will require additional analyses, but the results suggest that the precious few endowments of poor households (labor and land) may not be utilized in the most efficient way, or at least, it can be argued that there are serious constraints to the generation of higher earnings for households, despite the presence of underemployment for most of the year. Poverty reduction strategies would need to take into account the strong seasonal dimensions to labor supply to be effective.

Source: Wodon and Beegle (2005)

the mean and median working hours for women are about 10 hours above the corresponding values for men at the national level.

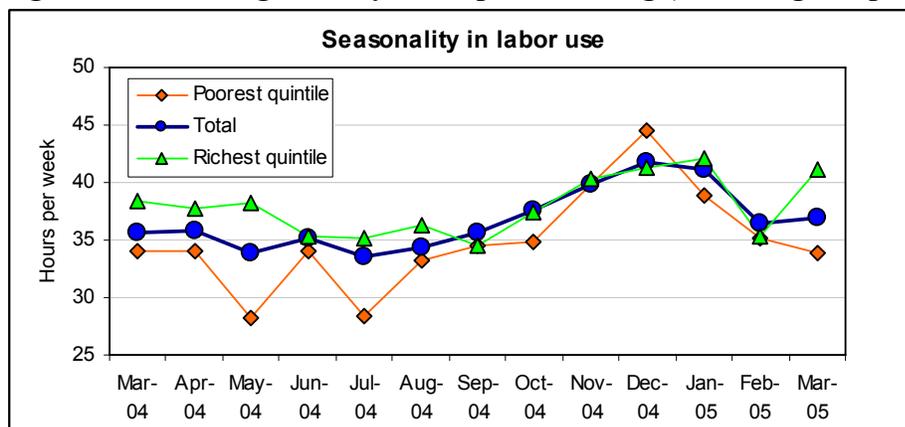
50. The results in Figure 2.20 highlight the presence of strong seasonality in time use. For the adult population, the average level of working hours is peaking in December-January, which is the busy part of the cropping season (see discussion in Chapter Seven). At that time, the adult population works on average more than five hours per week above the annual mean. The seasonal differential in working hours is largest for the individuals who belong to the poorest quintile of the distribution of consumption per capita. In rural areas, the additional workload in December versus the annual average amounts to close to 10 hours in the poorest quintile (see Chapter Seven). December is also the busiest month of the year for children (not shown).

51. As we expect gender and seasonality issues are more pronounced in rural households. The gender differences are even larger, such that for women the additional workload in December versus the annual average is 11 hours for the median, and 11.6 hours for the mean. The workloads for children are much lower, but girls do work longer hours than boys, again mainly due to a higher burden from domestic work as well as water collection.

52. Generally, labor in Malawi is assumed to be in surplus supply, with extensive underemployment. However, low mean hours in income-generating activities mask the existence of labor shortages at the peak of the cropping season. This seasonality in labor supply can have potentially large negative impacts on the ability of households to make the most of their

endowments such as land as well as their labor. The IHS2 data highlights the extent to which the seasonality in the demand for labor is leading to both underemployment and labor shortages (Box 2.4).

Figure 2.20: Average weekly time spent working (adults, age 15 plus), by wealth quintile



Source: National Statistical Office, IHS2

Household Enterprises

53. While not strictly household assets in the sense used above, household enterprises also provide a means to generate additional income. Only about one-third of the households in Malawi have household enterprises. There is no information in the IHS2 to explain why so few households have enterprises. But it is possible to infer that obtaining capital to start a business is difficult (Box 2.5). Of the households owning enterprises, 85 percent are found in rural areas. In both urban and rural areas, the majority of household enterprises are retail businesses (69 percent and 47 percent respectively). Manufacturing is the second largest category, and accounts for 13 percent of urban household businesses and 28 percent of rural household businesses.

54. The majority (63 percent) of enterprises are found in non-poor households, supporting the analysis in the Poverty Profile 1998, which stated that having a household enterprise is an important factor associated with higher welfare status.²³ Again, retail and manufacturing were the major categories for the household enterprises. The Poverty Profile 1998 further speculated that the type of manufacturing that rural households engaged in was handicraft production which would be a seasonal activity undertaken outside of the cropping season.

²³ It is important to recognize as well that households may also be driven to diversification as a result of distress. If agriculture fails due to harvest failure, for example, households may turn to residual non-agricultural activities as a survival strategy.

BOX 2.5: ACCESS TO CREDIT (*)

Only 12 percent of households reported obtaining credit in the 12 months prior to the IHS2 survey. For those who did not attempt to borrow, the largest reasons given (23 percent) was that the respondent didn't know any lenders. This was followed by believing they would be refused (12 percent) and getting a loan was too much trouble for what it's worth (11 percent). Recipients of loans have a higher education level than the general population.

For those households that did obtain loans, only 30 percent used the loan for business start-up capital: 37 percent in urban areas and 29 percent in rural areas. In rural areas, an equal percentage used the loan to purchase agricultural inputs for food crops (28 percent). In urban areas, 37 percent used the loans to purchase non-farm inputs.

Reasons for obtaining credit (percent)

	Malawi	Urban	Rural
Purchase land	0.5	1.1	0.4
Purchase agricultural inputs for food crops	26.7	16.1	27.7
Purchase inputs for tobacco	18.1	2.2	19.5
Purchase inputs for other cash crops	4.3	2.2	4.5
Business start-up capital	30.1	37.5	29.5
Purchase non-farm inputs	17.9	36.8	16.2
Other	2.4	4.1	2.2

Source: National Statistical Office, IHS2

Note: (*) The IHS2 data does not allow a distinction between household that do not have credit due to refusal or lack of access to financial institutions (or intermediaries), and household that do not have credit due to lack of demand (i.e. no interest in taking a loan).

Gender dimensions in labor and income earnings²⁴

55. Gender-based differences in access to resources and bargaining power in Malawi suggest significant disparities in welfare between men and women. The previous sections have discussed various income and non-income dimension of poverty and have highlighted the existence of gender disparities. Here we focus on two additional gender dimensions of poverty: labor and income earnings. The poverty status of individual household members cannot be directly calculated from the information in the IHS2, because data about the distribution of consumption within the households is not collected. As such, as far as income is concerned, we can only infer the effect of an individual's gender on his or her income welfare from differences between male and female headed households.

Agriculture and land holdings

56. Though there is a link between poverty and the size of land holdings, there are no significant differences between male and female-headed households in terms of the size of land holdings. Nevertheless, there is a disproportionately higher rate of poor among female- compared

²⁴ Annex 2A pools together information on gender inequities in Malawi. It discusses inequities in access to resources (notably in education, access to credit, and participation in income generating activities); the division of labor between women and men both in the labor market and in the domestic sphere; the empowerment of women both with regards to decision making; the victimization of women as measured by the prevalence of violence in general and especially domestic violence.

to male-headed households within small landholding sizes, due to the gender differences below. Further, widows have a much higher incidence of poverty than widowers. This could be attributed to property grabbing by relatives from the husband's side of the family, a widespread but undocumented phenomenon in Malawi.

57. Approximately 90 percent of all Malawian households can be labeled farming households, but broken down by gender, 95 percent of female-headed households farm compared to 88 percent of male-headed households. However, there are significant differences in crops cultivated by women and men, and in decisions made about agricultural tasks. Regardless of household size, female-headed households grow crops for home consumption to a greater extent than male-headed households, who are more likely to cultivate at least some cash crops. The most important cash crop in Malawi is tobacco, and this predominantly 'male' crop, is grown in 19 percent of male headed households compared to just 7 percent of female ones. Moreover, for food crops such as maize, male-headed households are more likely than female-headed households to utilize higher yielding hybrid strains that require fertilizer for sale, rather than the lower yielding, seed-bearing strains chosen by women for domestic use.

58. While women hold decision-making power in female-headed households, in male-headed households there is a clear division: to the extent that women are involved in decisions about inputs and planting, their role is largely limited to crops that do not require fertilizer application, and where seeds are recycled. They make these decisions about 50 percent of the time, compared to just 10 percent of decisions where fertilizer is applied. For cash crops like burley tobacco, cotton and vegetables that require purchasing more inputs (fertilizer, seeds and pesticides), men make almost all decisions.

59. Provision of extension services to households is likewise skewed: only 8 percent of female-headed farming households obtained such advice compared to 14 percent of male-headed farming households. Based on the decision-making patterns above, it can be presumed that within a household, agricultural advice provided to men is not always passed on to their wives, furthering this gender gap.

Labor and income earning activities

60. There is a clear disparity in the use of time between men and women. Women work longer hours than men. However, they spend considerably less time on income generating activities (17 hours per week compared to 27 hours for men). The difference is made up in domestic chores, which men devote just 3½ hours to a woman's 24½ hours per week. Actually this disparity is likely to be even higher because it does not include child care and tending for the sick, which are traditionally female tasks. Much of the domestic work includes heavy labor such as fetching firewood and water (taking up 1½ hrs and 1¼ hours each day, respectively). The extra female burden also extends to girls, especially after age 10. They spend 16 hours a week on household chores compared to 10 hours for their male peers. This burden has a negative effect on girls education: among dropouts, 37 percent of girls cited the need to work at home as the reason, compared to 23 percent of boys.

61. Wage employment is not widespread in Malawi's economy, but there are gender gaps both in remuneration for the same type of job, and for the types of jobs performed by men and women. The median daily wage for women was MK78, as compared to MK124 for men. For the highest paid and highest skilled jobs, men and women are remunerated roughly the same. At lower wage levels, however, women are paid less for working the same number of hours on the same task as men, notably in production activities, where women are paid MK45 compared to MK120 for men, and for laborers, where women are paid 48 compared to 70 for men.²⁵ Part of this disparity can be attributed to different levels of education. These average figures mask a further disadvantage for women because of the seasonal nature of income generating opportunities during cropping time. One can expect that female-headed households depending on *ganyu* agricultural labor will be particularly exposed to food shortage and poverty, because of the lack of alternative opportunities the rest of the year. Moreover, the productivity of single farming women is reduced if they engage in *ganyu* to obtain some cash, rather than spending sufficient time in their own fields at cropping time, further increasing their vulnerability.

62. Overall, men were more likely than women to receive credit, though women were more than men likely to receive loans less than MK1000. The larger the loan, the likelihood that the recipient is a woman decreases. It should be noted that this finding may also be due to lower demand for credit by women (for instance because women may not have the same opportunities as men to open an enterprise).²⁶ There are clear differences in the use for credit by gender. While women are most likely to use their loan to start up a non-agricultural business (more than 50 percent of women), men, on the other hand, were more likely to use credit for inputs for agricultural production, in particular for tobacco production.

63. Approximately 10 percent of women owned and managed their own enterprises, compared to 16 percent of men. Women spend on average 20 hours per week on their enterprise, compared to 29 hours per week for men, and women tend to generate less profit than men (MK160 per day compared to MK280). These differences might be the result of women spending less time, and thus accruing less skill and opportunity for further investment on their business. It could also be related to the lower education level of women than men, and from the types of enterprise. However, most enterprises for both men and women fall into 'unspecified retail', so this effect could not be measured. One other explanation for low profitability among women enterprises may be that they tend to be risk averse and invest in low capital intensive businesses. Chirwa (2005) finds that most female small enterprises are mainly in food processing and beer brewing, and less common in non-food manufacturing and high skill enterprises.

Access to roads, transport, and distance from markets

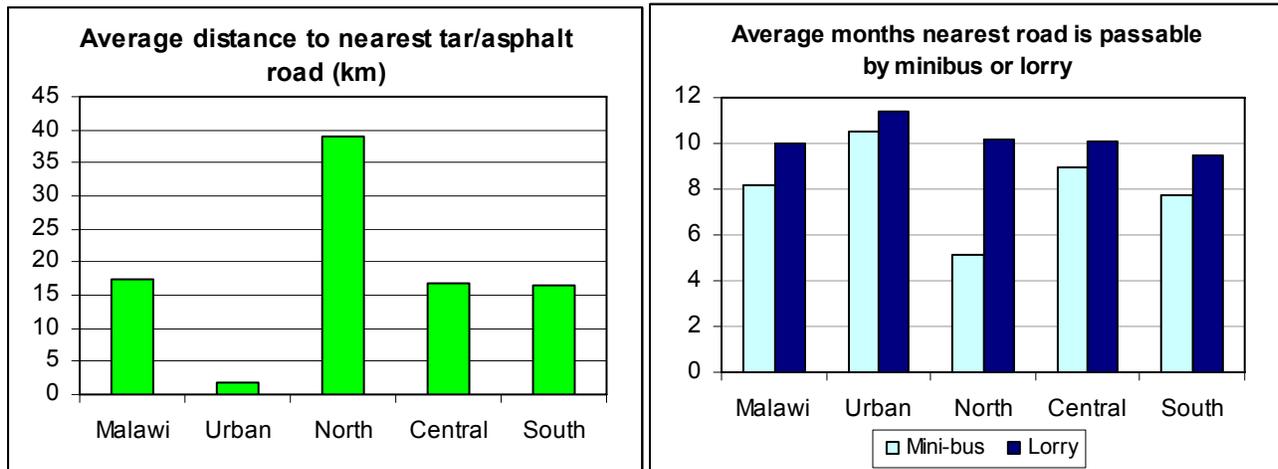
64. The IHS2 community questionnaire contains a few questions regarding access to roads and transport services, and distance from markets. Overall level of access to roads and transport

²⁵ These statistics on wage differentials need to be cautiously qualified as they are just averages which are based on very few observations, and also because these averages do not control for other aspects that lead to such differences. For example, there is need to distinguish between *ganyu* and salaried employment, and also the educational levels, skills, and level of experience have to be taken into account.

²⁶ As indicated in Box 2.6, the IHS2 data does not allow a distinction between household who do not have credit due to refusal or lack of access, and household that do not have credit due to lack of demand.

services is low. As expected, urban communities report much higher levels and quality of access. Many more urban roads are tar or asphalt compared to rural roads. One third of urban roads are tar/asphalt compared to only 13 percent of rural roads. Rural communities on average are located 20 kms from a tarmac road, and this distance is higher at about 40 kms on average in the North region (Figure 2.21).

Figure 2.21: Distance to nearest tar/asphalt road and number of months road is passable



Source: National Statistical Office, IHS2

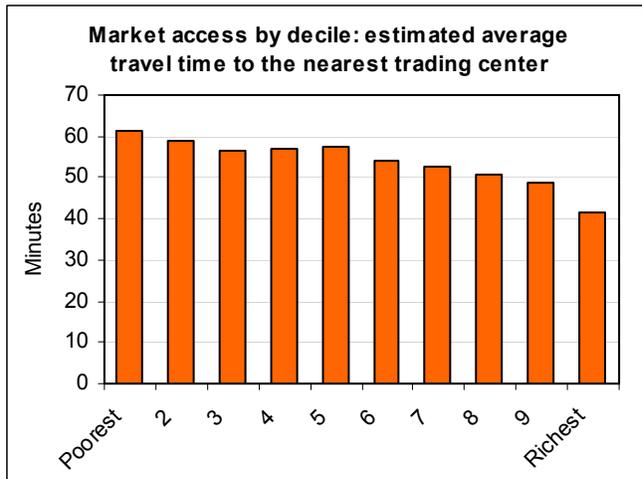
65. Roads in urban communities are passable for most of the year (10 or 11 months, depending on type of vehicle) while roads in rural areas are impassable up to four months in the year. In the North region, on average roads are passable by minibus for only 5 months in the whole year. In the South region, on average less than 8 months. Clearly these averages hide greater variation within each region, and highlight the fact that many communities are extremely isolated from the rest of the country.

66. Almost two-thirds of urban communities have a bus stage in the community, while only about 40 percent of rural communities have bus stages. And the nearest bus stage in rural areas averages about 7 kms distant.

67. Using Geographic Information System (GIS) information about the road network in Malawi, we produced a variable that would express the distance of the household from the nearest *Boma* (district administrative center) or trading center. Our estimate, provide an indication of the remoteness of each community, taking into account the distance and the different types of roads which connect it to the nearest trading center (Figure 2.22).²⁷ In practice, travel times will vary depending on household access to means of transportation.

²⁷ The variable is constructed by assigning travel speeds of 70 km/hour on primary road, 30 km/h on secondary road, 15 km/h on tertiary road, 10 km/h on sub-tier road, and 4 km/h on walking path. The estimate of remoteness is common to all households in a given community (IHS2 enumeration area).

Figure 2.22: Estimated household travel time to nearest trading center by wealth deciles



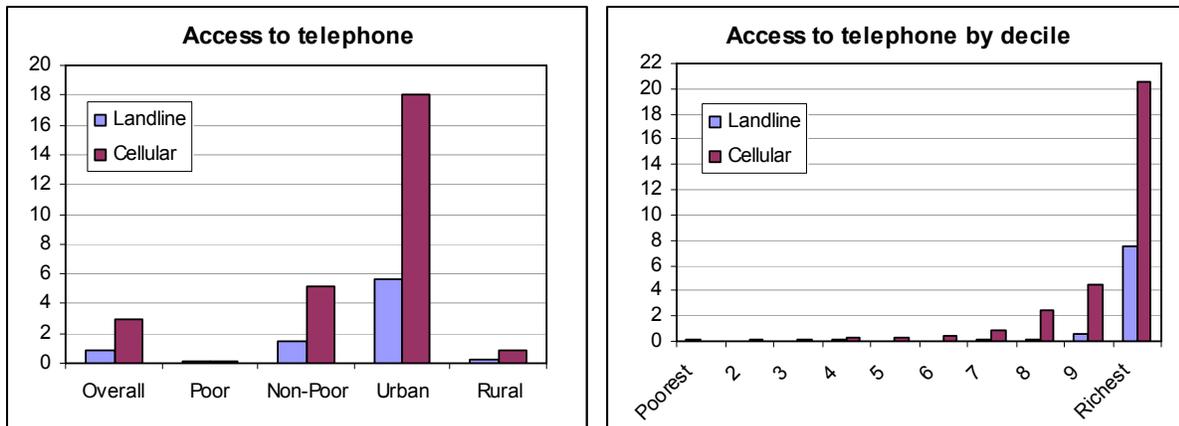
Source: National Statistical Office, IHS2, and GIS information on road network

Access to communications

68. The ability to communicate with communities and individuals outside of one’s own community is limited in Malawi. Less than one percent of households have a working landline telephone and only about three percent of households have someone in the household who has a cell phone (Figure 2.23). As expected the percentages are much higher for urban than rural households and much higher for non-poor than poor households. In fact poor households basically have no telephone access. Overall, only 0.2 percent of rural households have a landline and 0.9 percent of rural households have a cellular phone. Virtually all phone owners, either landline or cellular, are in the highest two deciles, and are predominantly urban.

69. The IHS2 community questionnaire solicited information about the presence of a telephone service, either public or private, in the community. Three quarters of all rural communities have to travel more than 2 kms to find a place to make a telephone call, ranging from 67 percent of communities in the South region to over 80 percent in the Central region.

Figure 2.23: Proportion of households with telephones (percent of households)



Source: National Statistical Office, IHS2

BOX 2.6. SUBJECTIVE VERSUS OBJECTIVE POVERTY

Quality of life, happiness and well-being are broad, multi-dimensional concepts that include not only material achievements but also other aspects, such as health, respect of others, employment, and having children. A special section of the IHS2 includes questions about the subjective wellbeing of each household, to check if objective economic indicators (income or expenditure) fall short on fully assessing satisfaction with life.*

Not surprisingly, the actual level of per capita consumption expenditure is a strong determinant of subjective perceptions about consumption adequacy: objectively better off households also feel richer. And the subjective perception of the minimum income level is remarkably consistent with the per capita consumption poverty line we estimated in Chapter one. One of the questions in the survey asks for the household's own assessment of the "poverty line", by asking the minimum income question (MIQ) in the following form: "What income level do you personally consider to be absolutely minimal – below which you could not make ends meet?" Though there was considerable deviation in the responses (Std. dev. = 18110), on average, households perceive the minimum income needed to meet food and non-food needs to be MK16,600 per year—very close to the poverty line of MK16,165.

A range of variables predicts both objective and subjective poverty in the same way. These include land cultivated, number of heads of livestock, amount of durable assets, the amount of *ganyu* performed, and the type of dwelling. Income poor households are more likely to report expenditure on food and clothing as inadequate: approximately 75 percent of households from the lowest deciles of expenditure distribution consider their expenditure on food as inadequate, compared to 35 percent in the top deciles. Similarly, poor households are much more likely to categorize their expenditures on clothing as inadequate compared to better off households. In contrast, the share of households who felt that their health expenditures were inadequate stays almost constant up to the 60th percentile of expenditure distribution.

In other areas, there is more of a discrepancy between objective and subjective poverty. While subjective perceptions of economic well being are closely tied to consumption expenditure, the relationship is not fully proportional to a household's income. Controlling for other factors, larger households are more likely to be monetarily poor, but are less likely to feel poor. Even though larger households, on average, have less income, they do not associate household size with poverty, but rather, derive a sense of belonging, support and care that feeds positively into their perception of well being. Similarly, households with a larger share of adult females report higher levels of well being. Conversely, though single adult households have poverty levels among the lowest of all households, at least 40 percent of them perceived consumption inadequacy in all categories. Households that own an enterprise, and households that are headed by an individual with a diploma or degree are less likely to feel poor than a household of similar means without these attributes. Other significant factors explaining differences between subjective and objective poverty are polygamy, female household headship (both polygamous and female-headed households feel better off), tenurial type, and language group.

Interestingly, perceptions of consumption adequacy also vary geographically. Rural households rank their wellbeing lower than similar households from urban areas. But within rural areas there is also variation: though the rural Southern region is both objectively and subjectively the poorest, the rural Northern region, which objectively is second poorest, has lower perceptions of poverty than the Central region. In other words, people in the North region feel richer than people in the Central region, even though the opposite is true when we measure actual consumption. As we have seen, this can partly be explained by a higher availability of social services in the North.

*The findings reported in this box draw on a report for DFID by IDS using the IHS2 data, "Vulnerability to Chronic Poverty and Malnutrition in Malawi," by Devereux et al. 2006, as well as our own analysis which is explained in greater detail in Annex 2D.

THE DETERMINANTS OF POVERTY IN MALAWI IN 2005

70. The poverty profile completed above is a descriptive tool that provides key information on the correlates of poverty, by comparing the poverty status of a particular household or individual to selected characteristics of that household or individual. Though insightful, such a bivariate exercise is limited in its usefulness because it shows how poverty levels are correlated to one characteristic at a time, and in so doing, tends to simplify complex relationships. The ‘determinants’ of poverty analysis goes beyond the simple bivariate poverty profile to consider the correlates of poverty in a multi-variate context.

71. There have been two previous attempts to model the determinants of household welfare in Malawi. The first attempt was done by modeling the determinants of smallholder incomes in rural Malawi using the 1992-93 National Sample Survey of Agriculture (NSSA) data (World Bank 1995, pp. 48-49). However, the model used by the NSSA was limited to rural smallholder households, and considered income levels rather than the consumption-based household welfare indicator used here.²⁸ The second study is “The Determinants of Poverty in Malawi, 1998”, based on the analysis of the 1998 IHS1 survey data and carried out by the NEC, NSO and IFPRI in 2001 (NEC et al, 2001).²⁹ Here, we update the work carried out in 2001 using the 2005 IHS2 data. Our model relies strongly on the earlier effort to estimate the determinants of poverty in Malawi using 1998 household data (NEC et al., 2001).³⁰ Whenever possible, we compare our results with the findings of the 1998 Determinants of Poverty study.

Modeling the determinants of poverty

72. Our approach to assessing the determinants of poverty in Malawi is based on modeling the natural logarithm of per capita consumption of survey households. In other words, our choice of dependent variable, that is our household welfare indicator, is the logarithm of total annual per capita consumption and expenditure reported by a survey household. The model can be specified as follows:

$$[2.1] \quad \ln c_j = \beta x_j + \eta_j$$

where c_j is total annual per capita consumption of household j in Malawi Kwacha (MK); x_j is a set of exogenous household characteristics or other determinants, and η_j is a random error term.

73. The set of explanatory variables that are hypothesized to determine of consumption includes household and community characteristics. We avoid using variables that may determine living standards but also be simultaneously determined by current income (endogenous variables). Our objective is to select regressors whose values are determined outside the current economic system of the household, but which determine the level of

²⁸ In this earlier study, eight household variables, plus Agricultural Development Division fixed-effect variables, make up the final model. The most important determinants of smallholder incomes were found to be the amount of cultivated land (positive), household size in adult equivalents (negative), and gender of household head (negative if female).

²⁹ Hereafter referred to as Determinants of Poverty in 1998.

³⁰ This model is also documented in Mukherjee and Benson (2003).

household welfare (exogenous variables).³¹ Our selection of potential determinants is guided by the results of the poverty profile presented in the previous sections, as well as by those variables known to be of considerable interest to Malawian policy makers.

74. One essential point to note is that we do not determine causality here through this analysis. Rather, we build our model of consumption expenditure based on an understanding of economic theory, and we select variables that economic theory says are likely to be exogenous. We then quantify and interpret the relationship as causal. Thus, our causality hypotheses are guided by economic theory. The most our empirical model can do is test this body of theory.

75. In order to minimize problems associated with ‘omitted variable bias’ we adopt a very broad specification of the consumption model, including as large a number of variables as possible (which we can ignore ex-post, if the statistical analysis indicates that they have no significant impact on consumption). It should be noted, however, that this approach towards model selection does not entirely free us from worries about omitted variable bias. As a result the degree to which this analysis can shed light on the determinants of living standards should not be overstated.

76. The set of regressors, or independent variables, that we chose as possible determinants of poverty in Malawi are listed in full in Annex 2E. Broadly, they may be categorized as follows:

77. *Demographic:* These variables aim to capture the basic demographic characteristics of the household, including the sex of the household head, the age of the household head, whether the household head is a widow, the total size of the household, the number of children.

78. *Education:* We included measures to capture the highest educational attainment of the household head. Specifically we distinguish between households whose heads has some primary schooling, or has completed primary, or has some post primary schooling.

79. *Employment and occupation:* In this category we sought to capture the effects of the distribution of different sorts of occupation at the household level. The variables used include whether the household head is engaged in formal wage employment, and/or whether the household runs a non-farm enterprise.

80. *Agriculture:* We also included variables to account for whether the household farms had any rain-fed plots, the total per capita landholdings of rain-fed land held by the household,

³¹ For instance, the educational level of the head of household is an exogenous variable when examining household welfare, since it is determined by actions that are unrelated to the welfare level of the current household of which he or she is the head. The education level of the household head is likely to be an outcome of the past welfare status of his or her parent’s household rather than of the current welfare status of the household. In contrast, the quality of roof under which the household sleeps is an endogenous variable when examining household welfare. It is only households with higher welfare levels that one would expect to have metal roofs. That a household has a metal roof is directly a function of its current welfare status, i.e., roof type depends on the level of household welfare. Other endogenous variables that are likely to be an outcome of current household living standards (as measured via consumption levels) include the possession of durable goods by household members, dwelling characteristics, current school attendance of children in the household, and so on.

whether the household has a *dimba* plot, and whether the household grew tobacco cultivation (in the last cropping season).

81. *Community characteristics and access to services at the community level:* We included variables to examine the impact of the existence of a regular bus service to/from the community, and we also controlled for the presence of a health clinic and bank in the community. We also accounted for different access to markets by including a dummy if the household is in a *Boma* (District administrative center) or Trading center, and checked for the presence of an ADMARC market and a daily market. We use the GIS-based access-to-market variable described earlier to express the distance of the household from the nearest *Boma* or trading center (in several categories: >20-30mins, >30-45mins, >45-60mins, and >60mins). Finally we included a dummy for the presence of a tarmac/asphalt road in the community.

82. *Regional fixed effects variables:* Regional dummies have been include to captured fixed effects based on the 3 main regions of the country (North, Central and South), and urban.

Results of the analysis

83. Detailed results of the estimated regressions are presented in Annex 2E. The regression uses log of per capita consumption, and consequently the coefficients of the regression can be interpreted as partial effects measured in percentage terms. These results are depicted in Figure 2.24 and summarized below. For all estimated coefficients that are statistically significant, the figure shows the percentage impact on per capita consumption of a change in each household or community characteristic considered in the regressions. Whenever possible, the discussion also highlights any differences from the results of the earlier determinants of poverty study which used the 1998 IHS1 survey (NEC et al, 2001).

84. The results confirm that female headed households are substantially poorer than male-headed households. Holding all other variables constant, a female-headed household has 14 percent less consumption per capita than a male-headed household. This result is very significant in all rural areas, but does not appear to hold in urban areas. This contrasts with the findings of the 1998 poverty profile, which highlighted a “puzzling result” that male-headed households appeared to be poorer than female-headed households in the South region (NEC et al. 2001, page 21).

85. Households whose head is aged between 26 and 45 years appear to be richer by around 7 to 9 percent (compared to household heads aged 18-25). At other ages, the age of the household head is not significant, except for those household heads 56 or more years of age in most rural areas and in urban areas. When the head is 66 or more years of age, per capita consumption decreases by 8 percent overall (again compared to household heads aged 18-25). Unlike the findings of the 1998 determinants of poverty study, we find that this relationship is more pronounced in urban areas.

86. Households headed by a widow appear to be better off by 6 percent on average. The impact is larger and significant in the North region, but appears not significant in other regions. The difference may be due to the fact that in the North, following the death of the spouse,

independently of the gender, the widow generally has the choice to keep control of the household's land holdings and assets. In the other regions, however, control of the assets depends on the gender of the surviving spouse.

Figure 2.24: The correlates of poverty in Malawi in 2005 (percentage change effect)



Note: OLS regression on log of per capita consumption. Only statistically significant results at 10% or lower are shown. Omitted categories are: age of household head less than 26 years, education of head is zero, travel to the nearest *Boma* is less than 20 minutes, regional dummy for the South region. Each bar in the graph can be interpreted as the percent change in per capita consumption associated with a unit change in that variable.

Source: Own calculations based on IHS2

87. In line with the poverty profile analysis, household size has a highly significant negative correlation with per capita consumption. As household size increases, per capita consumption decreases by almost 28 percent. Household size has the least negative effect in the North region where increases in household size decrease per capita consumption by 22 percent. The household size squared is shown to be significant and positive, which suggests the possibility of some economies of scale of household welfare derived from increasing household size.

88. The number of children is negatively related to consumption in the household. The effect of children 0 to 4 years of age in the household is the strongest, with the overall results showing an 8 percent decrease in per capita consumption. The effect is strongest in urban households where the presence of children 0 to 4 decreases per capita consumption by 14 percent. Interestingly, in rural areas children older than 10 years do not affect consumption negatively, possibly because they start to contribute early to productive household activities.

89. Consistent with the results of the 1998 study (as well as numerous studies on the determinants of poverty in other countries), we find that the education of the head of the household is positively related to consumption and is highly significant. As the education of the household head increases, the coefficient also increases. For example, overall, having some primary education adds 5 percent to per capita consumption, having completed primary school adds 12 percent to per capita consumption and having more than primary adds 40 percent to per capita consumption. As expected, the impact of post primary education is larger in urban areas, where there is more demand for such training.

90. Participation in wage occupation is strongly associated with higher per capita consumption, by about 12 percent on average, and much higher in rural areas where such opportunities are rare. Similarly, households that have a non-farm enterprise are strongly associated with higher expenditures by about 14 percent on average, and much higher in the North region (22 percent).

91. In terms of agricultural activities, household per capita consumption increases by 8 percent with each additional hectare of rain-fed land. Given that landholdings of rain-fed land are approximately 1 hectare on average, this suggests that even doubling of landholdings would increase incomes by only 8 percent approximately. Per capita consumption of households that own a *dimba* plot is higher by 7 percent on average, highlighting the benefits of access to irrigated land that can be cultivate in the dry season. Households that grow tobacco (the most common cash crop) tend to have higher per capita consumption by 9 percent on average, reflecting the gains from the participation in cash crops production.

92. Distance from markets is an important determinant of poverty. Households located in a *Boma*³² or Trading Center on average have per capita consumption higher by 15 percent. As expected, this effect is much larger in the North region, which is the most remote and least connected region, where per capita consumption in a *Boma* or trading center is higher by 24 percent. In the Central and South regions, the effect on per capita consumption is about 9 percent and 6 percent respectively.

³² District administrative headquarters.

93. If the household is located more than 30 minutes away from the *Boma*, the household's level of consumption per capita will be lower by at least 10 percent. Again this effect is greater in the North region. There are two puzzling results, however. Firstly, the negative impact of distance appears to be greater for households which are located between 30 and 45 minutes away from the *Boma*, than for households which are more than 45 minutes away. Secondly, distance from the *Boma* appears to have a positive impact on consumption per capita in the Central region. These puzzling results may reflect a problem with the construction of the access variable.

94. A tarmac road in the community has a significant positive effect on per capita consumption. Overall, it increases per capita consumption by 13 percent. The largest positive effect is seen in the urban areas and in the Central region where per capita consumption is increased by almost 44 percent. However, in the North region, a tarmac road in the community decreases per capita consumption by 20 percent. This result seems counter-intuitive especially in light of the positive results for the other regions and is difficult to explain. As noted above, if the household is located in a *Boma* in the North region, the effect is the strongest on per capita consumption. This result may be an artifact of the data due to the fact that of the households in the North region, only 11 percent have tarmac roads in the community, leading to a very small number of relevant observations on which to make inference.

95. Having a health clinic in the community is associated with 7 percent higher consumption per capita on average, although this effect is not significant in urban areas (and has a negative sign).³³ Note that this relationship may be due to the fact that clinics are placed in relatively richer villages, rather than because of a positive impact of clinics on spending. Our regression analysis cannot distinguish between these two effects.

96. The presence of an ADMARC market in the community is associated with lower levels of consumption per capita by about 4 percent. Hence, the results indicate that the presence of ADMARC tends to be associated with higher levels of poverty. It is important to note that ADMARC had not been functional for the in the 4 years prior to the survey. ADMARC had not been purchasing maize due to its cash flow problems and had participated in selling maize only on occasional basis (as part of government financed food security initiatives). The impact of ADMARC's lack of regular operation, coupled with its negative effect on the presence of private traders, appears to be perpetuating poverty.

97. The fixed effects variables in the multi-variate model tell us that the North is the most disadvantaged area to be located. In interpreting these coefficients, however, it is important to realize that, when estimating the regional-effect coefficients, the model ('controls for' and) removes the effect of all other explanatory variables. In other words, the results indicates that all other characteristics being the same, a household resident in the North is likely to be poorer than

³³ This is the only result connected to the health clinic that is either negative or not significant. Sixty-four percent of all urban communities have no health clinic and 100 percent of poor urban communities have no health clinic. Once again, the negative effect is probably not so much the presence of the service that is driving the effect rather it is the poverty of the communities that is being reflected in the results.

a household living in other regions; on the other hand, that all other characteristics being the same, a household located in urban areas or in the Central region is likely to be richer.³⁴

³⁴ In reality, when assessing the level of welfare associated with living in a given region, we observe the impact of the many variables affecting the level of welfare, such as differences in the levels of human capital and the natural resource base in the different regions. Consequently, the regional coefficients estimated by the model do not coincide with the overall welfare conditions observed in the various regions (which have been described in the poverty profile), since the latter include the impact of differences in the other determinants. In fact, the results of the poverty profile showed that the overall incidence of poverty is higher in the South region and is lowest in the Central region.

CHAPTER 3: RISK AND VULNERABILITY TO SHOCKS IN MALAWI

INTRODUCTION

1. Poverty is not a static concept. It includes a stochastic dimension. That is to say, it is always somewhat uncertain who will become poor, and when, and accordingly, eradicating poverty entails both the identification of who are the poor today, as well as ways to protect households that may become poor in the future. As such, a sound poverty reduction strategy must incorporate two distinct elements: (i) *poverty alleviation* programs to mitigate the adverse effects of current poverty, and (ii) *poverty prevention* programs that reduce the risk of becoming poor.

2. This chapter reviews the concepts of income poverty in Malawi, making a distinction between chronic and transient poverty, and the roles of risk and strategies to cope with shocks. Given the methodological difficulties and data limitations we do not try to measure chronic poverty and economic vulnerability directly. Rather, the approach is to examine: (i) who the ultra-poor are (the poorest households with arguably the highest probability of being chronically poor), (ii) the sources of risk in Malawi, (iii) the ways in which risk contributes to Malawi's high and persistent levels of income and non-income poverty, and (iv) what actions households take to cope with risk and shocks, *ex ante* and *ex post*.

3. The chapter is structured as follows. The next section highlights the role of risk and shocks as a cause of poverty, and the dynamic nature of poverty in Malawi. The following section reviews the prevalence and characteristics of risk and shocks in Malawi. We then discuss the concepts of chronic and transient poverty, and highlight some of the broad characteristics of members of these groups. The final section discusses the main coping strategies adopted by households.

RISKS AND MOVEMENTS IN AND OUT OF POVERTY

Risks and shocks as a cause of poverty

4. Individuals and households confront a number of barriers that cause many to fall into poverty, and undermine attempts to escape poverty it. Some of these barriers are predictable and known, perhaps linked to past and present policies, institutions, and structural features of the economy. Others are linked to adventitious shocks and unexpected adverse events that impact on individuals, on households, and on the wider community. Shocks such as illnesses, injuries, deaths, employment losses, crop failures, thefts, and droughts can be major set-backs to households, keeping them poor or, for the non-poor, pushing them into poverty.

5. It follows that among the poor, some fraction are living in poverty as the result of fluctuations in economic status attributed to adverse shocks. As such, risks and shocks are important determinants of poverty dynamics and growth, and it is important to understand the nature and frequency of shocks and, in particular, the varying coping strategies used to deal with these shocks. Risk affects the ability of households to sustain assets and endowments, as well as

BOX 3.1: KEY CONCEPTS OF VULNERABILITY, RISK AND SHOCK

Risks are potentially dangerous events that are likely to cause economic loss or damage when they occur, while *shocks* are the actual occurrence of a risk. Although poor households may be more likely than the non-poor to be exposed to risk (for lack of *ex ante* options like insurance and income diversification), there may be some risks which are commonly and widely distributed within Malawi across socio-economic groups. *Vulnerability* implies the susceptibility of individuals, households or communities to the negative impact of events or shocks (for a review of the concept of vulnerability, see, among others, Hoozeveen *et al.* 2004).

Shocks are often classified by the extent to which they co-vary within communities versus the extent to which they are idiosyncratic. Using these two extremes, we can think of various shocks as being arranged along a continuum. *Covariate shocks* such as drought and floods are those that simultaneously affect a large number of households typically in close geographic proximity to one another. *Idiosyncratic shocks* consist of fairly household-specific problems or crises, such as serious illness or unemployment of a household head.

Of course, the same type of shock may be more or less covariate or idiosyncratic depending on the details of time and place. For example, adult morbidity or mortality can be idiosyncratic in the case of rare illness or covariate in case of epidemics. HIV/AIDS may affect several households within one family, which in some sense makes it covariate, in the sense that households may not be able to receive assistance from their main traditional network of support (e.g. family members) since those households have also suffered from the event.

While idiosyncratic shocks can be singularly devastating, covariate events can be even more difficult to cope with as households may not be able to gain assistance from traditional support networks, other households, which are also affected. In a severe drought year, for example, small cultivators will not only lose their own crop, but will also find less work in other's fields. In these situations, *ganyu* may be an important coping mechanism for idiosyncratic shocks but not covariate events as its availability depends on the community-wide economic situation.

Even when shocks are covariate, they may affect households differentially. The poor may already farm marginal lands which are more sensitive to rainfall deviations, or more prone to flooding. Families whose household members are already malnourished due to poverty may suffer more illnesses, deaths, and disabilities from a community-wide shock than wealthier and healthier households.

Vulnerability can vary geographically, depending on the nature of risks and the resources available locally (within communities or district governments), but can also vary across types of individuals and households. By identifying vulnerable groups, those that are deserving of special assistance can be targeted effectively.^(*) Vulnerability can imply lower consumption and increased poverty, but it can also have very important long-run implications if vulnerability is managed by compromising future income earning potential, such as selling off productive assets, reducing human capital investments (such as child schooling), and avoiding new investment opportunities.

The ability of households to reduce or prevent vulnerability depends on three broad areas. The first is severity and frequency of risks facing households. The second concerns the level of the household resources which can include capital (financial assets as well as physical capital such as land and livestock). The third regards access to social networks (family, friends, neighbors, community associations, markets, etc.) and public programs.^(**) All of these factors influence the *ex ante* and *ex post* coping strategies adopted by households, as well as the overall impact of negative shocks on households.

Attempts have been made in some settings to use information from household surveys to calculate an indicator of vulnerability, similar to the poverty headcount measure. However, in practice, measuring vulnerability—the high exposure to risk combined with limited capacity to manage risks—is difficult to quantify. We rarely know the full set of risks that the household faces, what strategies and resources they can use to manage these risks, and what would be the expected economic or other losses in the event of an insured shock.

Notes:

(*) Often the term “vulnerable groups” is used to describe individuals or households characterized by exceptionally low levels of income or high levels of poverty (those in a state of being helpless, weak or otherwise “excluded” groups). The identification of these vulnerable groups can then be used to target the poor by serving as a proxy for detailed income data which is usually costly or unavailable for the entire population. This is not equivalent to a definition of “vulnerability” defined as households with high risk exposure and limited coping strategies.

(**) The second and third groups are broadly consistent with the five types of capital outlined in a livelihoods framework: natural, physical, financial, human, and social.

the transformation of assets into incomes (activities). Understanding how risks are managed by households, communities and the public sector in Malawi can open a window to understanding critical underlying processes that have contributed to the country's high poverty levels and stagnant growth levels.

6. As will be discussed later in this chapter, risk can cause poverty and failing growth through both *ex ante* risk-avoidance strategies (behavioral impact), and *ex post* coping with the impact of shocks. Households with uninsured risk may adopt *ex ante* coping strategies such as avoiding profitable but risky opportunities. That is, they avoid high-risk, high-return investments in areas considered to be drivers of economic growth, such as new crop varieties or new cash crops. Instead, households enter into low risk, low-return activities or invest in low risk assets, which can then result in a poverty trap (see, for example, Dercon, 2002, among others).

7. For many households affected by a shock, some *ex post* strategies adopted to cope in the short-run may have detrimental long-term implications. If households draw down critical productive assets, they may end up perpetually trapped in poverty. Other forms of coping may have intergenerational effects, such as pulling children out of school and reducing meals, which then compromises the health of children and reduces future productivity, thus making them vulnerable to poverty traps (see, for example, Alderman *et al.*, 2001, Hoddinott and Kinsey, 2001). Using long-term panel data tracking children into adulthood, Alderman *et al.* (2006) show that drought-induced early childhood malnutrition has long-term consequences. Beegle *et al.* (2006) find a long-run impact of parental deaths on education and health in adulthood. Shocks can also lead to more severe forms of coping such as prostitution.

8. By extension, risks and shocks can have significant impacts on overall economic growth. Dercon (2004) shows that uninsured risk among households in Ethiopia, mainly rainfall shocks, have substantial impact on consumption growth which persist for many years, and translate into lower growth rates overall. How exposure to risk affects economic growth is a key issue in development. A recent article quantifies both the *ex ante* and *ex post* effects of risk using long-running panel data for rural households in Zimbabwe (Elbers, Gunning, and Kinsey, 2007).⁵⁵ The key finding is that risk substantially reduces growth in this particular setting: the mean capital stock in the sample is (in expectation) 46 percent lower than in the absence of risk. About two-thirds of the impact of risk is due to the *ex ante* effect (that is, the behavioral response to risk). These results suggest that policy interventions that reduce exposure to shocks or that help households manage risk could be much more effective than is commonly thought.

The dynamic dimension of poverty

9. Absolute poverty remains high in Malawi, with nearly 6.4 million Malawians (52 percent of the population) living below the national poverty line, and about one-fifth of the population living in ultra-poverty. Poverty is persistent and self-perpetuating, but far from static, as we might expect given the pervasive nature of risk and vulnerability. When compared to the IHS1 data for 1998, some districts experienced a reduction in poverty, while others saw increases in poverty: although the overall levels of poverty remain stagnant, the ranking of districts has

⁵⁵ The study uses a simulation-based econometric methodology to estimate the structural form of a micro model of household investment decisions under risk.

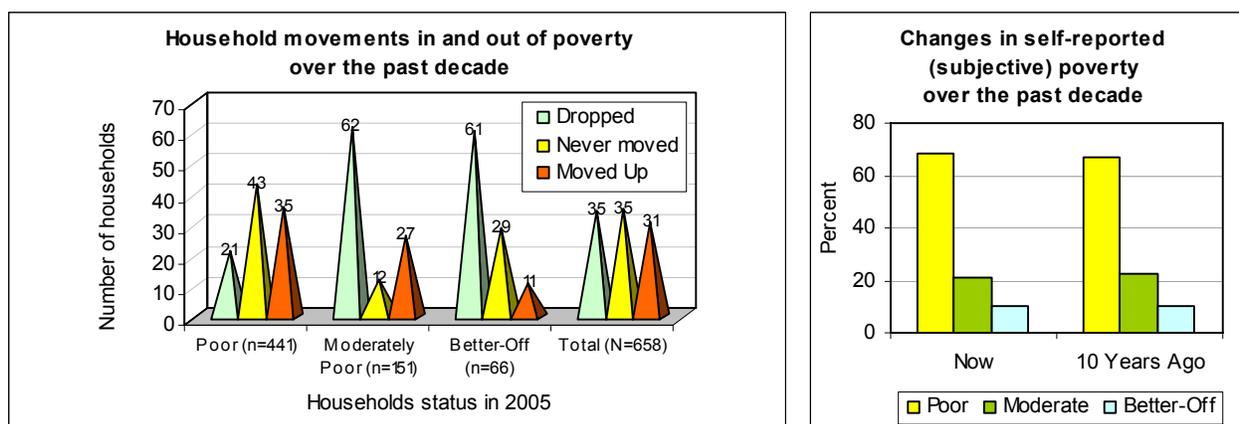
changed. Even at local levels, there are important poverty dynamics, with some households moving out of poverty while others fall into poverty.

10. The best measure of living standards dynamics are constructed from panels surveys of households, where economic status is measured at two or more points in time. One such panel study tracked 291 rural households, finding that almost two-thirds of the poorest 20 percent of households in 1998 had moved into a higher income quintile by 2002 (Sharma *et al.* 2002).⁵⁶ By implication, since overall poverty has remained steady, two-thirds of those who were not so poor in 1998 had *fallen* into the poorest quintile in 2002. Preliminary findings from the *Moving Out of Poverty* ongoing World Bank study also confirm these findings (see Box 3.2).

BOX 3.2: MOVING OUT OF POVERTY - UNDERSTANDING GROWTH FROM THE BOTTOM-UP

In 2005 the World Bank started a worldwide, multi-country study on how households and communities move in and out of poverty. Malawi is one of the case study countries, with the work conducted by the Center for Social Research of the University of Malawi, and IFPRI, in collaboration with World Bank staff. The policy focus of the Malawi study is to examine the impact of changes in access to basic infrastructure (markets, roads, health services, water, schools, etc.) for household economic growth. The study is based on predominantly qualitative analysis of data from an appositely designed questionnaire sampling 15 communities across Malawi, and also some quantitative analysis using data from the five Complementary Panel Surveys (follow up panel surveys on the IHS1). Data collection was completed in 2005, but the data analysis is still in progress and a draft report is expected in Summer 2006.

Preliminary results are consistent with the findings of this poverty assessment. Even though poverty levels have not changed much over the past decade, there has been a large amount of movement of households in and out of poverty (see Figures below). Limited access to inputs is generally regarded as a major constraint to moving out of poverty. Cycles of hunger, mainly resulting from poor weather and low use of fertilizer, are also perceived to trap people in poverty. In this context, communities where access to markets and services has improved, have prospered. Also, areas actively serviced by NGOs have prospered over the years. At the household level, factors leading to downward mobility include natural disasters, distress sales of livestock/assets, HIV/AIDS and chronic illnesses, death of spouse (particularly a husband), and alcoholism. Factors leading to upward mobility include possession of livestock or assets, crop diversification, participation in cash cropping, venturing into small-scale businesses, building up savings, having multiple sources of income, and remittances from working children/relatives.



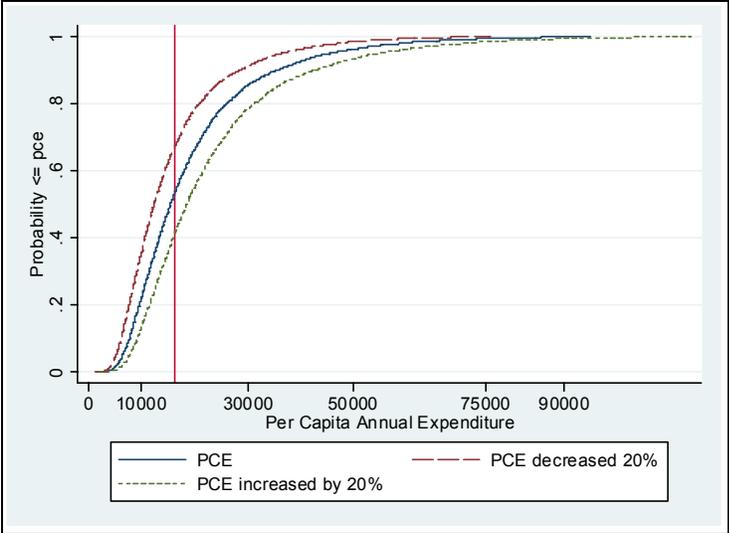
Source: Preliminary findings from 2006 “*Moving Out of Poverty*” study (World Bank, 2007)

⁵⁶ It is presumed that some share of the economic mobility is actually reflecting measurement error in consumption which will result in over-estimates of transition rates.

11. Households in the IHS2 also report that living standards are quite dynamic and can vary across years. One-third of all households reported that their economic well-being had not changed in the last year, whereas the remaining two-thirds reported a change; 25 percent of all households reported an improvement in the last year and 43 percent reported a decline in well-being.

12. Another way to view the dynamic nature of poverty is to examine the response of poverty rates for a given change in consumption levels for all households (a distribution-neutral change in consumption). Figure 3.1 charts this relationship for Malawi. If every household experienced an increase in consumption of 20 percent, the poverty rate would fall from 52 percent to 40 percent of the population. On the other hand, a decrease in consumption of 20 percent would be associated with two-thirds of the population living in poverty (66 percent poverty rate). This emphasizes the point that the poverty level in the country is very sensitive to changes in consumption, modeled here under simplistic conditions. Another way of looking at the same concept is to note that there are millions of Malawians who live just above the poverty line threshold, and could be forced into poverty by even slight misfortune.

Figure 3.1: Cumulative Density Function of per capita consumption associated with consumption increases/decreases of 20 percent



Note: PCE refers to 'Per Capita Expenditures'.

Source: National Statistical Office, IHS2

VULNERABILITY TO RISK AND POVERTY IN MALAWI

13. The high level of risk confronted by households is manifested in the dynamic nature of poverty discussed above. In order to understand which households are most vulnerable to shocks, and to becoming poor, we first need to examine the major types of risks facing households, and the characteristics of households which are most exposed to these risks.

Extent of Risk in Malawi

14. Ninety five percent of households in the IHS2 identified having experienced at least one shock in the past 5 years. (Table 3.1). The data are strikingly consistent with shocks reported by the rural sample of households from another, much smaller household survey covering a similar time frame (see Annex 3A)

15. The most prevalent shocks are related to crop yields and increases in food prices, reflecting Malawi's great dependence on rain-fed agriculture and its vulnerability to droughts and floods. As many as 77 percent of households report being affected by substantial price shocks during the last 5 years; similarly 65 percent of all households report being affected by a collapse in agricultural crop yields as a result of erratic weather. Illness or injury to a household member is also very common, reported by almost half of all households, consistent with the high prevalence of shocks associated with death of family members. This reflects, in part, the HIV/AIDS epidemic.

Table 3.1: Shocks in the past 5 years as reported by households (percentage of households reporting)

<i>Type of shock</i>	Expenditure Quintile				Richest 20 %	All households
	Poorest 20 %	2	3	4		
Lower crop yields due to drought or floods	71.4	68.1	67.1	62.5	50.8	62.5
Crop disease or crop pests	20.9	24.7	26.2	26.4	20.9	23.7
Livestock died or were stolen	29.9	35.2	35.5	36.1	30.1	33.3
Household business failure, non-agricultural	13.5	19.0	21.1	24.8	26.7	21.9
Loss of salaried employment or non-payment of salary	4.7	8.0	8.2	9.4	10.6	8.5
End of regular assistance, aid, or remittances from outside household	5.8	6.9	6.8	7.7	7.8	7.2
Large fall in sale prices for crops	33.7	37.8	40.5	41.3	36.1	38.0
Large rise in price of food	74.3	75.5	79.7	78.6	76.1	77.0
Illness or accident of household member	41.8	46.3	47.1	49.0	43.7	45.7
Birth in the household	11.1	12.9	13.0	11.8	7.7	11.0
Death of HH head	4.8	5.0	4.7	4.6	4.8	4.8
Death of working member of household	7.9	9.9	9.6	8.4	8.0	8.7
Death of other family member	35.5	39.3	43.4	41.8	41.1	40.6
Break-up of the household	10.1	10.2	9.9	8.9	10.3	9.9
Theft	13.2	17.6	17.8	21.7	22.9	19.3

Source: National Statistical Office, IHS2

16. The data are broadly consistent with prior expectations about which shocks are covariate and which are idiosyncratic.⁵⁷ Lower crop yields due to droughts and floods and large price increase for food and decreases for crops are highly covariate. The majority of households report that most or all other households in the community were likewise affected. Livestock losses, business failure, and unemployment spells, mortality and morbidity shocks were more idiosyncratic, either concentrated among the household alone or shared with just a few other households.

⁵⁷ A full break down of the extent to which various shocks are idiosyncratic provided in Annex 3B.

Major Types of Risks in Malawi

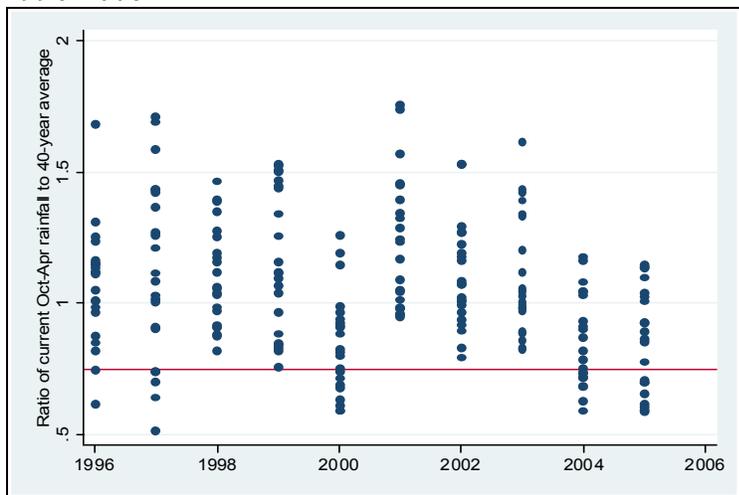
17. The major risks reported by households in Malawi can be grouped into four broad categories: (1) climate risks, including drought and floods; (2) animal and plant disease; (3) price volatility, partially reflecting consequences of climate risk; and (4) health shocks. In this section we briefly discuss the main characteristics of each.

Climate and environmental risks

18. *Climate and environmental risks* play important roles in vulnerability, since the majority of the population relies on rain-fed farming for their income, and Malawi's climate is marked by extreme variability and inequality of rainfall. In their study of the economic implications of climate variability, Clay *et al.* (2003) note that "Malawi emerges as one of the countries most sensitive to climatic variability in terms of the ranges of economic and agricultural sector aggregates considered." However, Clay *et al.* conclude that there is a "relatively weak and complex relationship between rainfall and performance of the main rain-fed crops."

19. The volatility in the rainfall pattern in Malawi is shown in Figure 3.2, which plots for each of the last ten years, the ratio of cumulative rainfall from October-April to the 40-year average cumulative rainfall, for 21 weather stations spread across the country (see Annex 7D). Year-to-year, there are large shifts in the distribution of these ratios by as much as 50 percent below or above the average levels. For simplicity, Hess and Syroka (2005) identify meteorological droughts as cumulative rainfall which is below 75 percent of the long-term average (represented by the solid line in Figure 5.2). By that criterion, in half of the years 1996-2005 there was drought at least one station (1996, 1997, 2000, 2004, 2005), in some case the number of stations experiencing drought is quite large (8 stations in 2000, 2004, 2005).

Figure 3.2: Ratio of Oct-April cumulative rainfall to 40-year average at weather stations, 1996-2006

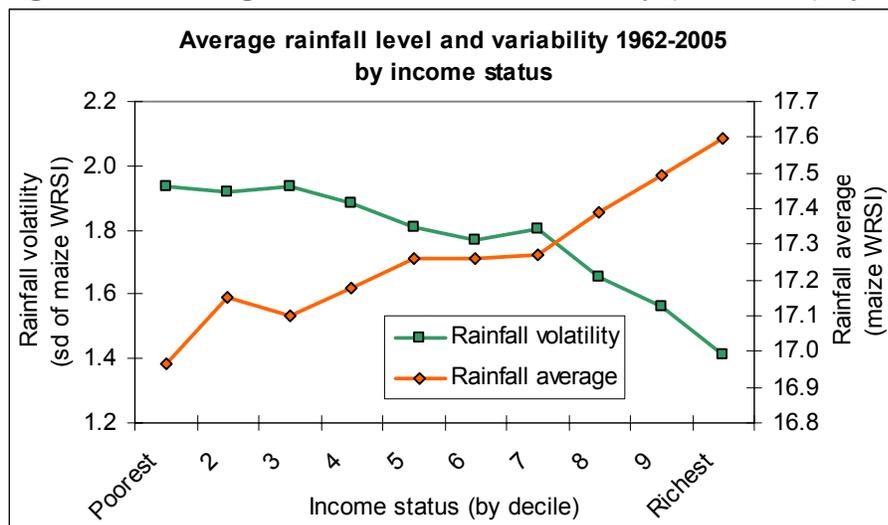


Source: Computed from daily rainfall data collected across 21 weather stations.

20. As expected, these wide differences in rainfall levels and variability appear to be related to household welfare. Figure 3.3 plots the long-run mean Water Requirement Satisfaction Index

(WRSI) for maize in Malawi, and its coefficient of variation, by households' per capita consumption level. The WRSI is an indicator of crop performance based on water availability during the growing season, calculated using a crop water balance model.⁵⁸ Figure 3.3 shows that the average WRSI level for maize is positively correlated with household income. On the other hand, higher variability in WRSI is negatively correlated with income.

Figure 3.3: Average rainfall level and variability (1962-2005) by income status



Source: Computed from daily rainfall data collected across 21 weather stations.

21. Droughts, flooding and mis-timed rainfall can all have large impacts on farmers, due to the loss in crop production and livestock. These events can have spillover affects to non-farm households too, as they harm consumers through increased prices of food commodities in general, and maize in particular. Many rural households are producers and purchasers of maize and other staple foods. They typically sell post-harvest (due to factors such as liquidity and storage constraints) when prices are low, but later buy during pre-harvest months which are most susceptible to price increase due to weather or other factors. Drought also can reduce employment opportunities in rural areas (*i.e.* demand for *ganyu* labor), which is an important source of additional income for smallholders and poorer households.

22. The impact of drought/floods is compounded by environmental degradation, which in addition to lowering income levels generally, can make households more vulnerable to other shocks. A combination of intensive farming practices and demographic pressures have led to substantial land degradation and a growing number of households farming marginal or low productivity lands. For example, the severity of drought will increase as lands become less productive, pushing farmers to the margin of survival. A majority of agricultural communities in

⁵⁸ The WRSI is defined as the ratio of seasonal actual evapotranspiration experienced by a crop to the crop's seasonal water requirement; hence it monitors water deficits throughout the growing season, taking into account the (phenological) stages of a crop's evolution (in this case maize) and the periods when water is most critical to growth. Studies by FAO have shown that WRSI can be related to crop production using a linear (yield-reduction) function specific to the crop in question (FAO 1986).

the IHS2 sample (81 percent) reported a worse or much worse degree of soil erosion on cropland compared to 5 years ago. Only 6 percent reported improvements.

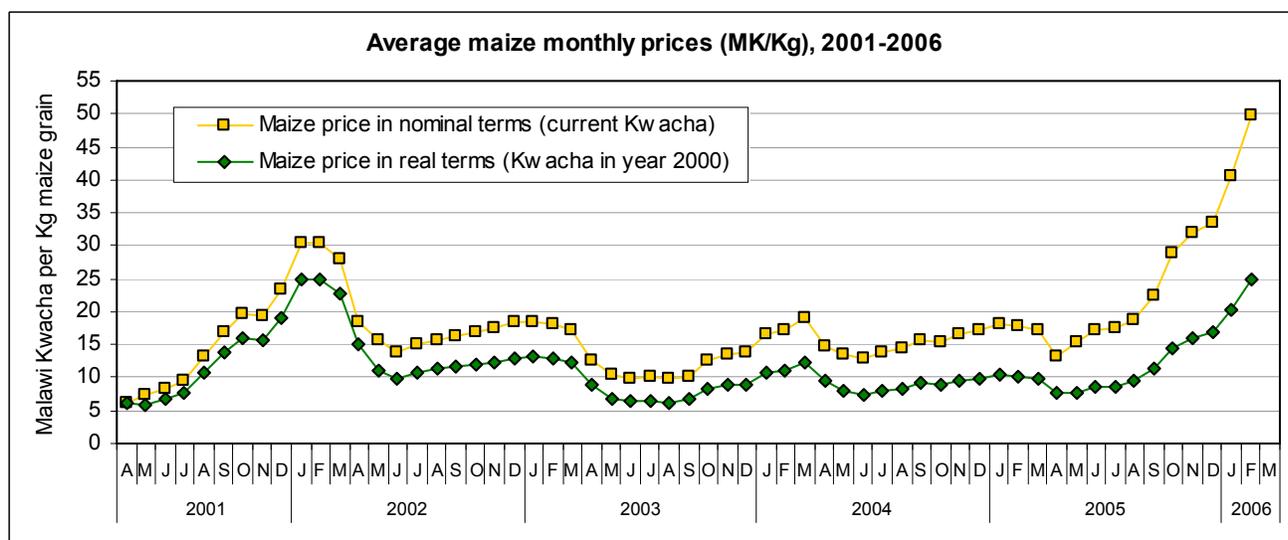
Pests and crop diseases

23. *Pests and crop diseases*, experienced at least once in the last five years by nearly one quarter of households, can result in harvest failure and serious income loss. Likewise, *livestock losses* can be caused by diseases or theft. Nearly a third of all households reported a livestock shock (in part this may reflect increase mortality due to drought conditions). When asked to rank the three major shocks, however, both crop diseases and livestock loss were a low portion of the most severe shocks.

Price volatility

24. *Price volatility* can be very disruptive to economic activities and living standards. While price risk affects everybody, the poor may be especially vulnerable to adverse effects since, unlike the rich, they often do not have access to savings instruments to protect their consumption or other non-income living standards (such as child schooling). In Malawi, maize, tobacco and fertilizer price risks pose the greatest source of vulnerability to households. The first and third because the majority of the population rely almost exclusively on maize for their livelihood; the second because it is the main export crop for Malawi and is mostly (80 percent) produced by smallholders. Figure 3.4 shows the monthly price for maize from April 2001 to February 2006. The graph shows the enormous inter-annual volatility of prices between ‘crisis’ years, such as 2001/02 and 2005/06, and ‘normal’ years. However, even in normal years, the intra-annual price variation is substantial. For instance, the price in March 2004 was 60 percent higher than it was three months later in June (post-harvest). In 2003, this ratio was 90 percent.

Figure 3.4: Monthly average maize price (MK/Kg) in nominal and real terms, 2001-2006



Source: Monthly average price from Agricultural Survey of markets for rural areas and NSO price series for urban areas.

25. A discussion on maize price volatility inevitably brings up the well-known conflict between net producers (maize selling households) and net consumers. For example, periods of price collapse are good for consumers as they can then buy maize at cheap prices, but bad for net producers as it lowers their income. Price hikes have the opposite effects. Maize price shocks are, to a large extent, capturing local production and, thus, production on farms, unlike other prices (such as tobacco and fertilizer). So, higher maize prices do not necessarily signal an increase in income for net producers, since they receive a higher price but this is likely to be the result of a smaller national harvest (which they can sell at the higher price).

26. Unpredictable policy changes cause additional uncertainty and often lead to both short-term and long-term negative consequences for the welfare of Malawian households (see Box 3.3). Subsidizing staple food prices (as opposed to providing targeted cash transfers to increase purchasing power of the most vulnerable) can undermine the income of net producer households, who fail to realize the expected returns to their investment decisions. In addition to the short term impact on household income of net producer households, such policy interventions will discourage future decisions to produce staple food as a cash crop, thereby perpetuating food insecurity. Similarly, the Government's distribution of free/subsidized fertilizer under the Start Pack/TIP/voucher program may impede entry or investment by private agents in the fertilizer markets, thereby undermining the long term objective to increase accessibility of fertilizer at affordable prices. In fact, numerous studies have highlighted the negative impact of the unpredictable interventions of the Government of Malawi in agricultural markets, both for the short and long term welfare of Malawians (see, for example, Jayne and Jones 1996, Nijhoff et al. 2002; World Bank 2004; Rubey, 2005).

Health risks

27. *Health risks* are pervasive in Malawi. These idiosyncratic, sometimes covariate, health risks can have large economic impacts on households. These risks can be severe events such as mortality associated with HIV/AIDS, TB, and malaria, or acute and chronic health conditions that erode a household's earning capability. The national HIV prevalence rate among adults is about 11.8 percent, ranking Malawi as one of the most AIDS-affected countries in the world. The economic implications of the disease are wide-ranging, as discussed in detail in Chapter Five. The impacts can be wide-ranging. Household income suffers as a result of illness and death of productive adults, not only due to loss in the labor of the affected individual and the associated medical and funeral costs, but also because the household may be pre-occupied with the care of the sick. In the long-run, there may be intergenerational consequences if orphans suffer from lower education and poor health as a consequence of losing a parent.

28. In Malawi, malaria remains a persistent risk in many parts of the country. In 2000, Malawi ranked fifth in the world in terms of rates of malaria (UNCDB). An estimated 25 percent of the population of Malawi suffered from malaria in 2000. Malaria outbreaks tend to be spatially correlated and bunched with other risks associated with rain. As a result, its impact tends to be magnified. It is a leading cause of morbidity and mortality, particularly among pregnant women and young children, in Sub-Saharan Africa (WHO 2004). Aside from compromising the labor supply of the household (and, thereby, its potential income earnings), the costs of health treatment can be considerable for poor households that have limited cash

resources. Moreover, malaria exposure may lead to additional adverse outcomes such as low birth weight and neonatal death.

BOX 3.3: UNINTENDED CONSEQUENCES OF GOVERNMENT ACTIONS THAT EXACERBATE FOOD INSECURITY *

Government interventions aimed at boosting food security in Malawi have sometimes had the opposite effect, and two case studies offer a cautionary tale of how government's good intentions can backfire and actually harm consumers. While consumer maize subsidies are seen as 'beneficial' to consumers, the 'benefit' can be short-lived. The experience of 2001/02 suggests that when ADMARC-subsidized maize stocks ran out, maize prices shot up much more than they otherwise would have, greatly limiting access to the staple. The ADMARC subsidies created a disincentive for private sector imports, which normally had a moderating effect on prices. Similarly, in June 2004 the government of Malawi announced a fertilizer subsidy, causing farmers to delay purchasing fertilizer and restricting the ability of fertilizer dealers to import planned levels in a timely manner. As the planting season began in November, almost two-thirds of fertilizer imports had not arrived in Malawi. This factor contributed to the food crisis in 2005.

Case study #1: *In 2001/02 the state's attempt to fix the maize price to make it more accessible to the poor led to the price of the staple skyrocketing.*

Malawi's maize markets were liberalized in the mid-1990s, allowing private traders to buy and sell maize at market prices. However, to this day, the government of Malawi continues to play a role in maize markets alongside private sector traders, mostly by selling maize through ADMARC, the agricultural marketing parastatal. During the 2001/02 period, ADMARC attempted to subsidize maize, ostensibly to help consumers gain access to low-priced maize. However, these attempts to stabilize maize prices for the poor had the unfortunate effect of making maize prices more volatile, exacerbating the crisis. In September 2001, ADMARC set a fixed price of Kwacha 17 (about US \$0.15) per kilogram for maize sold through its depots. This price remained unaltered for the next 18 months. But, in comparison to prevailing market prices in 2001, this ADMARC price was 'too low': that is, the ADMARC price was below the prevailing market price in both Malawi and neighboring countries. Private sector traders, including those that engaged in cross-border trade, saw no opportunities to sell at a profitable price in Malawi. Conversely, there were clear incentives to export Malawian maize to other countries in the region, where consumer prices were not being kept artificially low. As a result, as the 2001/02 hungry [lean] season progressed, ADMARC was not able to keep up with demand and many ADMARC depots ran out of maize. With no subsidized ADMARC maize available, consumers had to turn to private markets. Given the limited private sector supply caused by artificially depressed prices, maize was scarce. Consequently, prices for maize in local markets skyrocketed, in some cases quadrupling in just a few months.

Case study #2: *The government's attempt to provide fertilizer to farmers helped create a shortage in 2004.*

In June 2004, government officials revealed plans for a new fertilizer subsidy scheme that would bring down the price of fertilizer, and advised farmers to hold off buying fertilizer until the planned subsidy was put in place. Farmers apparently listened to the government recommendations, as evidenced by slow fertilizer sales from August to October, generally a brisk period for dealers. All inorganic fertilizer in Malawi is imported, and most importers order fertilizer in multiple orders, using the proceeds of the first orders to fund later orders. Consequently, the reduced cash flow had a chilling effect on follow-up orders. Adding to the uncertainty by September, reports emerged that the subsidy scheme could be dropped in favor of free farm input packs for two million households, and then the subsidy scheme resurfaced later that month in a presidential speech. Finally, in late October, the government reached agreement with a key donor for the distribution of free farm inputs to two million households through the targeted input program (TIP). The fertilizer subsidy scheme that had been announced in June 2004 was quietly forgotten.

As a result of the slow pace of follow-up orders stemming from low sales during the July-October period when farmers were holding out for the proposed subsidy, just over a third of the necessary fertilizer was in Malawi by the end of October. In November 2004, the main planting rains arrived, and a large (but ultimately unknown) percentage of farmers planted maize and tobacco without initial fertilizer applications. This compounded the impact of extended dry spells during January and February 2005, and contributed to the reduced harvest in 2005, triggering another hike in maize prices, and a possible food crisis.

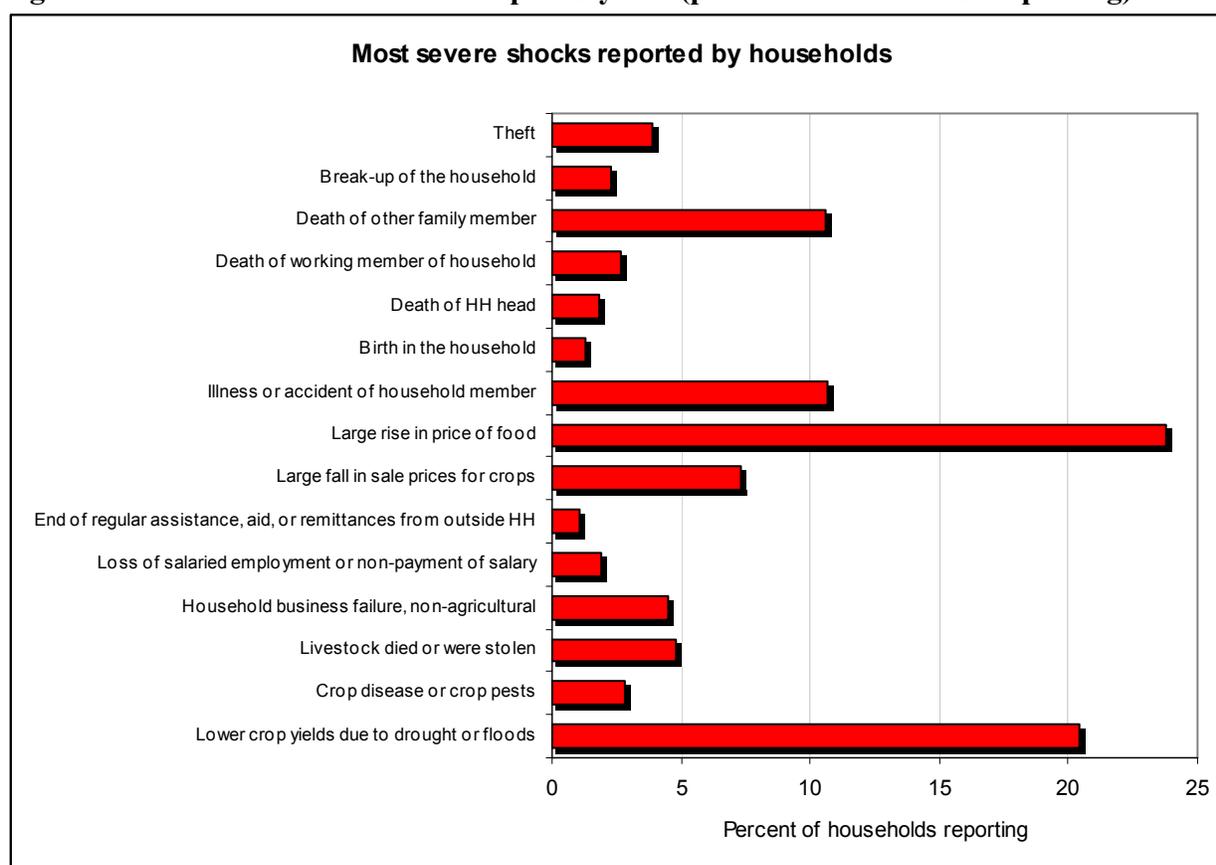
* Based on a short paper by Lawrence Rubey, "Do no Harm? How well-intentioned (but misguided) government actions exacerbate food insecurity: Two case studies from Malawi," May 2005.

29. Some types of health shocks will co-vary with life-cycle factors. Physical ability is significantly compromised at higher ages. For example, the percent of the population who report being unable to walk 5 kilometers without difficulty increases sharply with age, making households with older heads more vulnerable to health deterioration and potential economic loss.

Characteristics of Shocks in Malawi

30. Not all shocks are equal in terms of their economic or other consequences. Households were asked to rank the three most severe shocks (where severity was defined by the household). The results are presented in Figure 3.5. In addition to being the most common shocks, drought/floods and increasing food prices are also the most severe shocks, followed by illness and death of a family member. Food security and the impact of illness and death related to HIV/AIDS are treated in depth in the next two chapters, in light of the magnitude of the impact of these types of shocks on household welfare.

Figure 3.5: Most severe shocks in the past 5 years (percent of households reporting)



Source: National Statistical Office, IHS2

Note: Based on the top three worst shocks experienced by households among the 15 different types of shocks.

31. Measuring the impact of a shock more precisely is difficult, however. In the IHS2, households were asked about the implications of shocks experienced in terms of income and asset losses. Of course, a broader perspective would include things like food consumption,

schooling, and health care utilization, and these aspects are hard to capture from cross-sectional data. Poor households may have low levels of consumption, schooling and health, as well as high shock exposure, but that correlation doesn't necessarily reveal the effect of shocks on these outcomes.

32. In the IHS2, data were collected on whether the shock was associated with income and asset losses. Based on this crude indicator, we find that the majority of shocks are associated with some income loss. On the other hand, not all shocks were associated with any significant loss of assets (and, thereby, theoretically not affecting potential future income). However, this indicator might pick up noise from differences between the assessor and the household's perception of what constitutes an asset. Most notably, the loss of livestock was associated with income-only loss by 36 percent of households (not shown), and with asset-only loss by 23 percent of households (the balance of 41 percent felt both an income and asset loss). However, livestock loss is something most analysts would consider as an asset. Livestock is often used for consumption smoothing and as a store of wealth, so it is possible that the respondents themselves were excluding the livestock in their definition of asset losses.

CHRONIC POVERTY AND TRANSIENT POVERTY IN MALAWI

33. The dynamic nature of poverty discussed above suggests that the poor can be separated broadly into two groups: those who are persistently poor (chronically poor) and those who transition into/out of poverty (transient poor). It is important to separate these groups, since the most appropriate policies for them may be quite different. For example, for the latter group, programs that offer insurance or protection against depletion of production assets may be ideal, especially if transient poverty can result in only partial recovery of income over time. For the chronically poor, on the other hand, appropriate policies may constitute social assistance to reach minimum consumption standards or, more ambitiously, programs aimed more at accumulation of assets (human and physical).

34. In this section, we attempt to identify the key characteristics of the chronically poor and those who are temporarily poor, to help inform the design of social protection programs as discussed in Chapter Nine. In practice, it can be difficult to identify the chronic and transient poor, however, in order to target interventions appropriately. In fact, we are not able to directly differentiate between these groups among the 52 percent of the total population found to be poor in the 2005 IHS2 household data. Likewise, we cannot tell who, of the 48 percent of non-poor, will be poor in the next several years. Ideal data would follow individuals over time and track their poverty status, thus identifying which conditions and livelihoods were associated with persistent/chronic poverty status, which are associated with temporary transitions into poverty, and which are associated with poverty transitions from which households do not fully or partially recover.

35. Given that we lack such ideal panel data, the discussion that follows uses 'ultra-poverty' (which we can identify from cross-sectional data in IHS2) as a proxy for the chronically poor. To identify the characteristics of the transient poor from cross-sectional data, we fall back on a measure of "vulnerability to poverty", often defined as the probability that a household will be poor (i.e., having consumption below the poverty line), based on characteristics of the household,

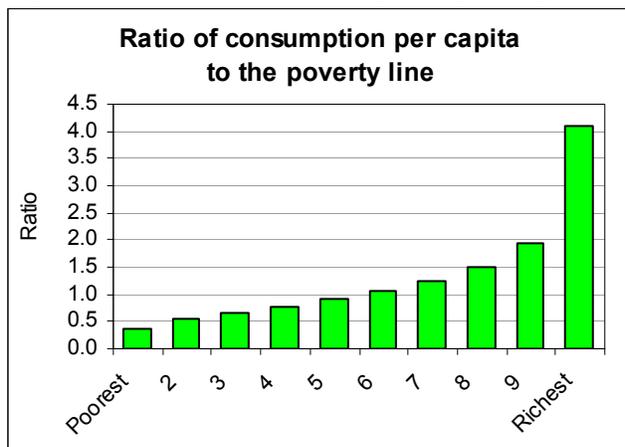
community, and other indicators. Thus we complement what we learned in Chapter Two about the determinants of poverty with an assessment of what characteristics make households more vulnerable to risk and shocks.

Chronic poverty in Malawi

36. The extreme poor often are characterized by low levels of endowments (few private assets, limited access to public goods and services and weak social capital) and few opportunities for advancement. We propose that these attributes of the ultra-poor result in long-duration or persistent poverty status, as opposed to transient poverty where the household recovers (experiences income growth) over time, and moves out of poverty. Thus, while the ultra-poor are not entirely comprised of those who are chronically poor,⁵⁹ it is proposed that ultra-poverty largely reflects chronic destitution.

37. In terms of distribution of income (proxied by per capita consumption), there is sizeable variation in incomes among those deemed poor (52 percent of the entire population). As shown in Figure 3.6, the poorest 10 percent of the population is significantly worse off than the rest of the population of poor in Malawi (those up to the fifth decile), with income, on average, which is 38 percent of the poverty line. If we take the ultra-poor as a group, representing 22 percent of the population, their income is on average about 50 percent of the poverty line.

Figure 3.6: Ratio of consumption per capita to the poverty line, by wealth decile



Source: National Statistical Office, IHS2

38. Many of the characteristics of the ultra-poor are reflected in the previous chapter's poverty profile and examination of determinants of per capita consumption. However, the profile of the ultra-poor is not exactly the same as the poor. Hence, in this section, we investigate in more detail the evidence regarding the likelihood of being ultra-poor.

⁵⁹ Some of the ultra-poor became destitute as a result of shocks they have experienced in the past, while others were born into extreme poverty and have remained so throughout their lives. Moreover, the share of ultra-poverty may reflect some transient poverty, experienced as a result of recent economic shocks from which some of the ultra-poor will actually recover.

39. The full results of the determinants of being ultra-poor regression are presented in Annex 3B. Female-headed households are significantly more likely to be ultra-poor, although this is not the case for those in urban areas or the north. Larger households are also more likely to be ultra-poor, and households with more young children have a higher likelihood of being ultra-poor. Education of the household head is a strong predictor of ultra-poverty: better educated heads are less likely to be ultra-poor. Wage/salary income and enterprise ownership are both associated with lower rates of ultra-poverty among rural households. Tobacco farming and landholdings are likewise associated with lower rates of ultra poverty.

40. Community variables generally show that households in communities with more infrastructure (including having a health clinic, bank, or daily market, and being a trading center or *Boma*) have lower probabilities of being ultra-poor. On the other hand, living in a community with ADMARC is associated with higher rates of ultra-poverty (and it was also associated with lower consumption per capita in the previous chapter). While bus service is not significant, households in communities with a tarmac road are less likely to be ultra-poor.

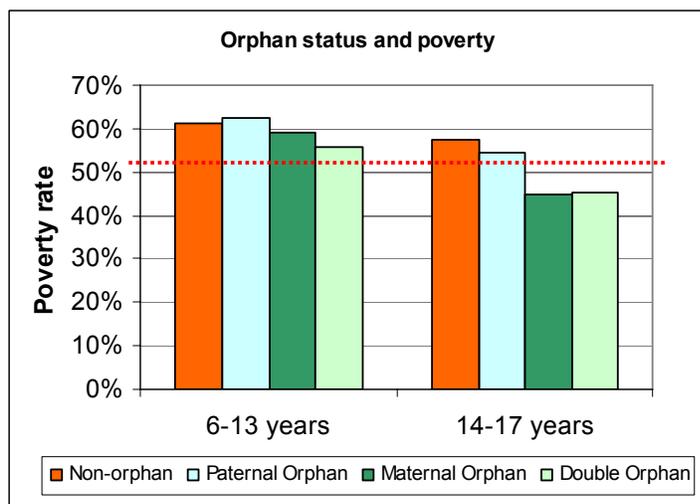
41. We can also extend this analysis of determinants of ultra-poverty to focus on subsets of the population. Children have statistically higher poverty rates than adults, and girls are not more likely to be ultra-poor than boys. Interestingly, orphan status is not consistently correlated with a higher probability of being ultra-poor (Figure 3.7). Likewise, children who are not orphaned but do not reside with their parent are also not consistently more likely to be ultra-poor.⁶⁰ Among the youngest children (0-5 years), orphan status and fostering is associated with a higher probability of living in an ultra-poor household, but very few children under the age of 6 fall into these categories. On the other hand, among 6-11 year olds, orphan status is not associated with ultra-poverty, and non-orphans residing with neither parent are less likely to be poor. Among children 12-17 years, single orphans living with their surviving parent and non-orphans residing with neither parent are less likely to be ultra-poor. This could reflect the purposive placement of children in better-off households in the extended family network. Alternatively, for these older children, it may reflect their income contribution to the household. In any case, it does call into question the common perception that orphans are systematically worse off, at least in economic terms.

Transient poverty and household vulnerability to shocks

42. Based on the determinants of poverty analysis in Chapter Two, the probability that a household will be poor (or may become poor) is higher for households headed by a young person or a very old person, or households headed by females, with large household size and a larger number of children and dependents, a household head with low level of education, little economic opportunities outside agriculture, limited access to land, and relatively less access to roads and markets. Regional location is also important, with households living in the rural South and North regions relatively more likely to be poor (reflecting differences in opportunities and characteristics which we have not been able to control for or measure).

⁶⁰ Chapter Five explores outcomes for children in regards to schooling and working (for income or chores). The results here should not be compared to those results as those regression include controls for poverty status.

Figure 3.7: Poverty rates by orphan status



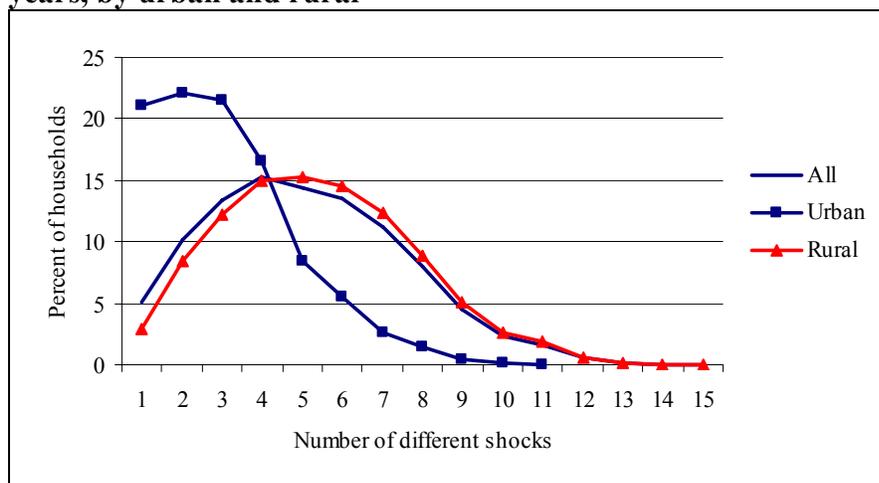
Source: National Statistical Office, IHS2

Characteristics of households vulnerable to shocks

43. Exposure to shocks, and an associated probability of falling into poverty, also varies depending on household characteristics. In addition to likely being more risk averse, poorer households have higher relative risk of experiencing a shock. In a simple comparison of shock exposure, we find that the poorest households were 36 percent more likely to report lower crop yields due to drought or floods than wealthy households. However, the poor do not have higher relative risk across all categories. For example, prevalence of illness or accidents was lowest among the poorest households (42 percent compared to a total mean prevalence of 46 percent). Moreover, some shocks increase sharply as they are related to risks associated with activities in which the poor do not engage. Non-agricultural business failure and loss salaried employment are shocks which are highly correlated with wealth, reflecting the higher prevalence of these activities in non-poor households. The correlation between current wealth and shocks will be re-evaluated below, with additional controls for household location and other covariates.

44. When households endure multiple shocks, coping can become progressively more difficult, and it can be impossible to disentangle the respective impacts of different shocks. Multiple shocks are very common in Malawi. The majority of households reported experiencing more than one of the specific shocks that was listed in Table 3.1. Figure 3.8 shows the distribution of households by number of shock types. Urban households experienced less shocks overall, with 60 percent of urban households reporting that they experienced 3 or less shocks. In contrast, over 75 percent of rural households experienced 4 or more shocks in the last five years. Moreover, the type of shocks reported varies, with agriculture-related shocks (related to crop yields, prices and livestock) dominant among agricultural households. Of course, Figure 3.8 is difficult to interpret, in that it doesn't allow for multiple events of one type, and we can not compare across shocks in terms of their socio-economic costs. Nevertheless, it suggests that even if risk exposure to the most prevalent shocks is reduced (such as drought or floods, and increasing food prices), a large number of households will remain exposed to other risks, reflecting the overall high prevalence of different types of shocks.

Figure 3.8: Household reports of the number of different shocks occurring in the last five years, by urban and rural



Note: There are 15 different types of shocks which are listed in Table 5.1.

Source: National Statistical Office, IHS2

45. Probability models (using probit specification) of being affected by a shock in the last 5 years are used to examine the relationship between the occurrence of a shock and household endowments. Household characteristics include attributes of the household head (gender, widow status, age, education), household demographics (household size, number of children under 15 years), whether the household is engaged in agricultural, and rural status. Attributes of the community are included, such as: whether the community is a trading center or district *Boma*, bus service, and presence of a clinic. Current consumption (a proxy for household income) is also included, although we expect a degree of endogeneity: income will be affected by shock, as well as having an effect on shock experiences, so the coefficient on this variable will underestimate the true impact of income.

46. The association between a specific household characteristics and a shock will depend on the type of shock. Nevertheless, some patterns do emerge (see Annex 3C). For several shocks, we find that rural households with more education, larger land holdings, and higher expenditure are more likely to experience the shock event. With the exception of deaths and thefts, wealthier urban households do not appear to be more likely to have had an economic shock in the past five years. Both rural and urban households with a chronically ill household member are more likely to have shocks.

47. Consistent with the notion that the chronically poor are less likely to engage in riskier ventures with higher returns, we find that more remote rural households, those that have longer travel times to the nearest *Boma* (or trading center) or do not have a tarmac/asphalt road, are less likely to experience a shock (see Annex 3C). Remoteness is typically viewed as limiting opportunities for income growth (for example, by offering limited access to markets/traders and credit, high transport costs for crops, and lack of demand for non-agricultural services) and, thus, leading to higher poverty. Under these circumstances, higher risk effectively prevents households from engaging in economic activities and blocks them in a poverty trap (Box 3.4).

This observation has important policy implications which will be further explored in Chapter Nine.

BOX 3.4 RISK EXPOSURE AND POVERTY TRAPS

For the poorest, the impact of an economic shock can be the most devastating. With few assets or opportunities to reduce or shorten the impact, the poor may suffer the full impact of the shock, losing productive assets, food, education, health and housing. For many, therefore, the first strategy to deal with a risky environment is to avoid *risk exposure*.

Growing high-value and marketable crops is potentially profitable, but risky for a number of reasons. Besides inexperience in the individual farmer, the uncertainty associated with lack of infrastructure and unpredictable prices, exposes households to a higher-than-acceptable level of risk of failure. As a result, chronically poor agricultural households may avoid planting new, as-yet-untested crops, preferring instead the familiar crop of maize, perhaps supplemented by low-value traditional crops such as cassava. This strategy is likely to trap them at a bare subsistence level. The end result is that the poor tend to limit themselves to static, unproductive and low-paying occupations or income sources, which nevertheless offer a shield against the risk of newer varieties, trapping risk-averse households and those facing higher levels of risk in a subsistence means of livelihood perpetuating the cycle of poverty. In urban areas, households may be equally reluctant to make bold but risky choices about their livelihoods, with the same end result.

If risk-aversion, given high risk levels and few risk mitigation options, governs the behavior of a majority of households, then the potential growth of the country as a whole will be less than optimal. On the other hand, either formal or informal social protection systems might provide the cushion against failure that would encourage these households to invest in potentially profitable but uncertain enterprises.

COPING WITH SHOCKS: HOUSEHOLD COPING STRATEGIES

48. Faced with risk or an actual shock, individuals and households have to adapt their normal activities and practices to encompass the impacts or demands of their new circumstances. The adaptations they make can be somewhat or almost fully effective; likewise, they can come at moderate or high costs to the household. In this section, we explore the main coping strategies adopted by households in Malawi and their effectiveness at managing risk. The discussion focuses on both *ex ante* risk management strategies and *ex post* coping strategies after a shock has occurred.

Ex ante risk management strategies

49. While rational strategies of income diversification, savings, and investment can help avoid risk and maintain livelihoods through periods of crisis, not all households have the means to engage in them: these strategies depend on access to land, labor, capital, and/or knowledge. Dercon and Krishnan (1996) show that income sources are explained in part by household characteristics and entry constraints, rather than only reflecting a risk management strategy. Hence, while building the defenses of the poor to adopt such strategies is critical, the needs of those that are unable to adopt them should also be recognized. In fact, some of the chronically poor may be unable to benefit from productivity-enhancing safety nets and still need social assistance.

50. In the context of Malawi, the most common risk mitigating actions, aside from avoiding exposure, would include income diversification, especially crop diversification. Of course, while

diversification can be a risk reduction strategy, it might equally reflect access to capital that allows one to increase income. Alternatively, in the absence of functioning food markets the danger of food insecurity may lead households to limit the extent of diversification, and place a premium on production of staple food as a strategy to hedge risk. It is not always easy to distinguish between these interpretations of income diversification.

51. Table 3.2 shows the extent of crop-diversification and off-farm participation rates of agricultural households. Among rural households, just over half of households earn some income from crop sales excluding tobacco. This indicates that many households are subsistence farming in the strictest sense of the word: farming with no crop sales. Livestock sales and tree crop sales are income sources for 30 and 18 percent of rural households respectively.

Table 3.2: Sources of income earnings (percent of households reporting)

<i>Urban households</i>						
<i>Source</i>	Poorest 20%	2	3	4	Richest 20%	All
Crop sales (non-tobacco)	9.5	21.5	21.6	14.0	9.9	13.2
Tobacco sales	8.4	9.4	4.9	4.4	1.1	3.3
Livestock sales	7.7	9.0	5.6	6.2	3.5	4.9
Tree crop sales	7.9	5.6	3.6	2.5	0.6	2.1
Enterprise income	11.6	39.4	42.8	41.4	40.0	39.3
Retail/wholesale	9.5	27.5	28.8	32.1	24.8	26.4
Manufacturing	2.1	9.7	5.9	3.4	5.2	5.1
Other enterprise	0.0	3.0	5.4	3.0	7.8	5.8
Wage/salary income	41.7	40.2	50.9	51.6	67.4	58.7
<i>Ganyu</i> income	61.5	50.5	35.0	29.1	17.3	26.7
<i>Rural households</i>						
<i>Source</i>	Poorest 20%	2	3	4	Richest 20%	All
Crop sales (non-tobacco)	41.7	51.3	55.6	58.8	55.8	53.3
Tobacco sales	11.6	12.6	14.4	18.4	19.5	15.7
Livestock sales	25.1	29.8	33.2	33.9	28.5	30.3
Tree crop sales	17.3	18.1	18.5	19.4	18.2	18.4
Enterprise income	27.3	30.4	32.2	37.5	37.8	33.5
Retail/wholesale	10.2	13.0	13.0	18.5	18.8	15.1
Manufacturing	9.6	9.6	10.9	9.8	8.7	9.7
Other enterprise	5.2	5.2	7.3	7.7	8.1	6.8
Wage/salary income	21.0	25.1	23.2	25.4	30.4	25.3
<i>Ganyu</i> income	67.5	59.3	55.3	47.0	37.5	52.0

Note: Income source for crops and livestock refers to sales of output in the last season. Sample includes non-agricultural households (landless). Agricultural households are not restricted by definition to rural areas.

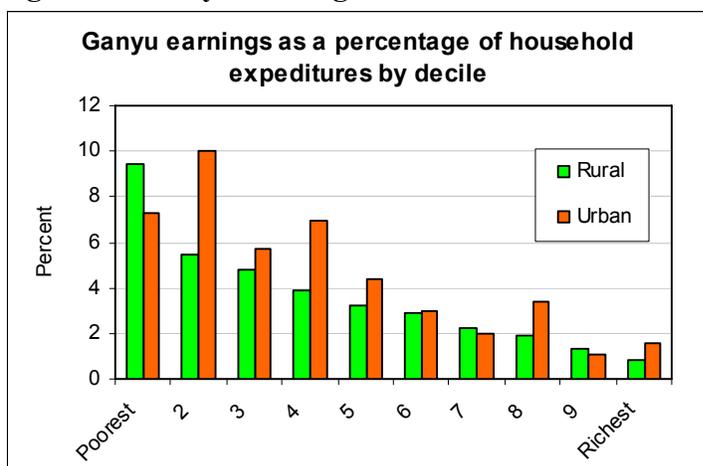
Source: National Statistical Office, IHS2

52. Large shares of both urban and rural households have non-farming income sources. The type and extent of diversification varies by income level. Wealthier households in rural areas are

much more likely to have income from enterprises (38 percent among the richest 20 percent in rural areas), mainly retail or wholesale trading, and from wage/salary employment (30 percent).⁶¹

53. It is important to recognize as well that households may also be driven to diversification as a result of distress. If agriculture fails due to harvest failure, for example, households may turn to residual non-agricultural activities as a survival strategy. In other words, occupational diversification may reflect the exposure of households to risk, and can therefore be a symptom of households' vulnerability. Poorer rural households do rely on wage/salary income (21 percent of rural households), but are even more likely to have some income from *ganyu* (68 percent). The patterns of income sources are similar for urban households, although levels of wage/salary employment are higher. Also, the number of households performing *ganyu* labor among the wealthy in urban areas is much lower (17 percent) than among the wealthy in rural areas (38 percent). *Ganyu* labor income finances a much smaller share of consumption expenditures for wealthier households. Although more rural households perform *ganyu* labor than urban ones, the share of household income derived from *ganyu* is higher for urban households. Among the poorest rural households, total *ganyu* earnings were about 9 percent of their total household consumption (Figure 3.9).

Figure 3.9 Ganyu earnings as a share of household expenditure, by wealth decile

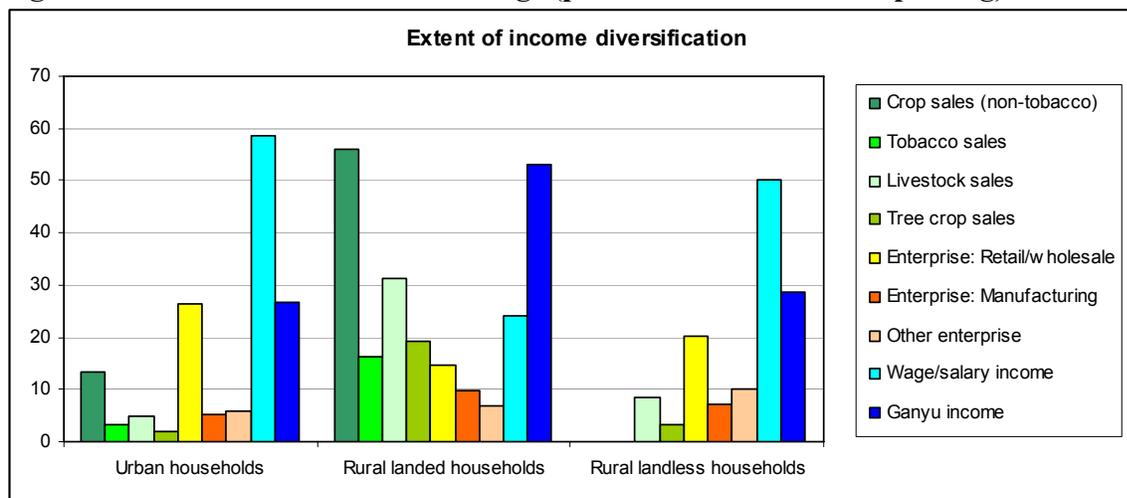


Source: National Statistical Office, IHS2

54. Table 3.3 and Figure 3.10 show the diversification in income sources across three categories of households: urban households, rural landed households, and rural landless households. A large share (60 percent) of landless rural households and urban household rely on one income source, which could put them at risk despite the higher income associated with their main income sources (enterprises and wage/salary employment). On the other hand, rural landholders diversify the most with about three quarters having 2 or more sources of income.

⁶¹ The category “wage/salary employment” excludes *ganyu* labor. It can, however, include those employed on a permanent basis as low-skilled laborers. The median number of months that these wage/salary employees report working in their main wage/salary job over the past 12 months is 10 months; the mean is 8 months.

Figure 3.10: Sources of income earnings (percent of households reporting)



Note: Income source for crops and livestock refers to some sales of output in the last season.
Source: National Statistical Office, IHS2

Table 3.3: Sources of income earnings (percent of households reporting)

<i>Number of Sources</i>	Urban	Rural landed	Rural landless
0	4.4	5.1	9.3
1	58.0	22.0	61.1
2	28.1	31.5	22.4
3	7.0	24.9	6.4
4-7	2.6	16.6	0.7

Note: Income source for crops and livestock refers to some sales of output in the last season.
Source: National Statistical Office, IHS2

55. Another method for diversifying income is through relocation of household members. Migration serves many purposes. It can be a means for individuals to seek new economic opportunities, for households to diversify earnings portfolios and insure against risk, and as a way of responding to specific shocks. In a study in Burkina Faso, farmers in the driest areas diversify through migration more than those in the middle of the country, but the households who do so are also the wealthiest. This diversification is not necessarily a risk-reducing strategy (Barrett *et al.* 2001). Conversely, in Botswana, Lucas and Stark (1985) conclude that remittance income from migration is a risk-reducing strategy for wealthier households with the remittances serving as insurance (as opposed to a form of altruism).

56. Remittances have an important redistributive and protective role in Malawi. Unfortunately, it is also difficult to identify remittances from migrants, unless the household classifies this as a “regular source of income” (beyond pension and investment income). Fewer than 1 percent of households report such income. The IHS2 household survey examined the reasons for migration among individuals who are residing outside of their place of birth. Most migration was not directly linked to economic situations but to family issues (marriage, divorce, etc.), which could themselves be linked to underlying economic issues (such as marrying daughters to men who reside in other villages to avoid exposure to covariate shocks). From the

data, we are unable to assess the extent to which households have previous members who have migrated out of the household in the recent past.

57. Formal and informal insurance may also provide households with effective means of protection from shocks. Formal insurance⁶² is quite rare among households in Malawi. Less than 1 percent of all households reported purchasing any type of insurance in the last 12 months. Informal insurance could entail belonging to rotating credit groups. Such group-based insurance schemes can be designed for very specific purposes. For example, there are group-based insurance schemes for funeral expenses in Tanzania and Ethiopia (Dercon et al. 2004). Informal insurance can also be much more nuanced and less clearly identified by researchers or even by the households themselves, such as the assistance that is provided by extended family to households, under the assumption that this aid would be reciprocated when needed. Unfortunately, we lack the data to assess the scope these informal insurance system in Malawi, although it is presumed that they exist.

58. The difficulties in measuring vulnerability, and the true impact of shocks, make it difficult to fully assess how successful risk management strategies are. Nevertheless, in spite of resorting to a diversity of risk management strategies, they don't appear to be very effective. In general, four drawbacks to household's own risk management strategies can be observed in Malawi. First, they achieve only partial insurance at potentially high costs. While many households diversify their economic activities to attain some level of self-insurance, they are still unable to fully insure. Second, they are localized and of limited scope. Third, informal insurance options may marginalize the poor who have less access to these mechanisms. Finally, informal insurance may have high hidden costs. Despite efforts to avoid shocks through income diversification and informal insurance, a large share of households in Malawi still experienced numerous shocks in the last five years.

Ex post coping strategies

59. Faced with the realization of risk into shocks, household are forced to choose from available coping options. Responses by households can be mapped to a hierarchy of coping strategies. The household could initially adopt a coping strategy that will enable it to survive the crisis without disintegration or significant damage or cost. These viable strategies include getting assistance from family and neighbors, securing a school bursary, accessing free food, getting a loan from an employer, or using some modest amount of savings/insurance.

60. Table 3.4 shows the first response to major shocks reported by households, ranging from spending cash savings, selling down assets, cutting back on consumption, and increasing labor supply. Borrowing or receiving assistance (which includes assistance from other households, non-governmental organizations and religious organizations) is most associated with the serious illness of household members (12 percent of households). More than half of households report "doing nothing" in response to a large drop in the sale price of crops reflecting the fact that farmers are unable to insure against agricultural price risk.

⁶² Formal insurance would include health, auto, home and life insurance.

Table 3.4: First response to major shocks reported by households (% of households)

Type of Shock	Response (percent)									
	Spend cash savings	Sold assets	Labor	Borrow	Receive assistance	Consume less	Pray	Nothing	Other	Total
Lower crop yields due to drought or floods	12.6	13.2	35.6	1.8	4.4	15.3	0.7	14.6	1.9	100
Large fall in sale prices for crops	6.3	17.5	18.2	1.3	0.2	3.4	0.1	52.5	0.6	100
Large rise in price of food	10.5	8.0	21.8	1.4	0.9	28.5	0.2	27.8	0.9	100
Illness or accident of household member	22.8	11.4	7.5	8.0	12.2	0.7	11.9	23.8	1.7	100
Death of other family member	11.4	6.3	7.2	4.1	0.5	1.0	13.8	54.6	1.1	100
Total	12.6	10.7	21.1	2.8	3.4	14.2	4.0	29.9	1.3	100

Note: First response reported by households among the 5 most prevalent major shocks.

Source: National Statistical Office, IHS2

61. To the extent that these initial coping strategies are not sufficient to address the shock, the household may then adopt strategies to survive the current crisis, but such actions increase exposure to future risk and precipitous decline in future income. These strategies include, among others, selling productive assets, withdrawing children from school, and reducing consumption for more vulnerable groups (young children). As the household gets more desperate, the household members may take extreme actions, such as engaging in commercial sex work and over-exploiting natural resources. Lastly, some households will fail to find an effective strategy to protect well-being in the short-run. Instead, the household may drastically reduce consumption and suffer increase morbidity and mortality as a result. The household may lose their dwelling unit, live in a temporary shelter, resort of begging or living in the streets or even dissolve/break-up the household unit.

62. Using information on asset holdings from the IHS2 and self-reported shocks, Devereux *et al.* (2006) examine the link between shocks and durable asset changes by constructing indices of asset holdings in 2003/04 and 2004/05 as reported by households and assessing the correlates of asset accumulation and depletion. They find that shocks in the past year are associated with decreases in durable assets, although the effect is not always statistically significant, supporting the proposition that asset depletion is one coping strategy for households affected by shocks, and that recovery from this depletion is easier for wealthier households.

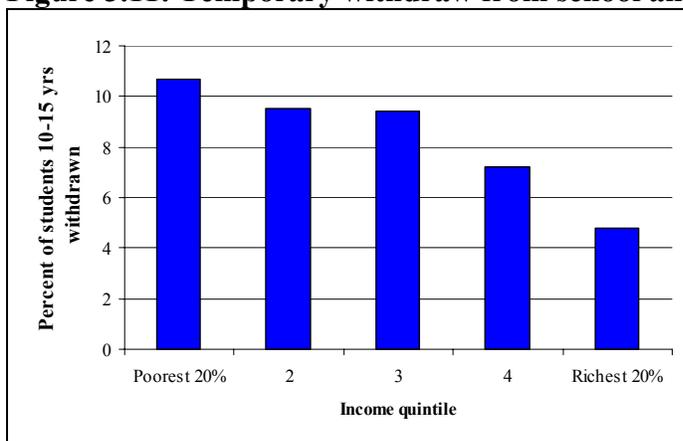
63. Asset accumulation is positively related to human and physical assets (education and land holdings). Households with better-educated household heads are more likely to have increased the value of their assets. Households who operate a household enterprise or cultivate more than 20 hectares of land are also associated with asset growth. Devereux *et al.* (2006) interpret this as evidence that ownership of human and physical assets is an important way to guard against vulnerability. On the other hand, they find that remoteness (measured by distance to a tarmac road and primary school) is associated with decreases in assets over time. While this suggests that greater remoteness will increase vulnerability, we also show that remoteness is associated with fewer shocks. This highlights the complexity of these relationships: some factors will

expose households to shocks —making them *more* vulnerable in the short term—while at the same time facilitate the accumulation of assets which can make them *less* vulnerable over time.

64. Other coping strategies could entail short-run adjustments which compromise households and individuals in the long-run, and may entail inter generational perpetuation of poverty. One piece of evidence of this is the temporary withdrawal of children from school (defined as a student missing 2 consecutive weeks of school). Figure 3.11 shows that students from poorer households are much more likely to experience temporary withdrawal from school. But to what extent is temporary school withdrawal a function of shocks rather than a general condition?

65. Using information on rainfall variation as a measure of shock, we examine the correlation between household characteristics, rainfall variation, and the probability that households with students had to temporarily withdraw a student.⁶³ Full results are presented in Annex 3D. The analysis indicates that a modest decline in the ratio of current rainfall to the long-run average is statistically associated with higher probability of withdrawal from school. A cumulative rainfall shortfall of 10 percent below the long-run average is associated with an increase in temporary school drops out by 23 percent. Although we do not know the precise reason for the school withdraws to occur with rainfall shocks, income declines are likely to be a driving force, resulting in inability to pay school fees or increased demand for child labor to earn income. These school disruptions mean less time in the class room and, in turn, compromise cognitive development of children and their education attainment.

Figure 3.11: Temporary withdraw from school among students 10-15 years



Note: Withdrawn so the student misses two or more consecutive weeks of instruction during the past 12 months.

Source: National Statistical Office, IHS2

66. Thus, in addition to the immediate short term costs, the *ex post* coping mechanisms discussed above entail substantial permanent damage to the household ability to engage in productive activities (e.g., due to increased stunting, or reduced schooling, or reduced productive assets, such as farming implements). However, without longitudinal data, it is difficult to assess fully the long-term consequences of household’s *ex post* coping.

⁶³ Chaudhury et al. (2004) undertake a similar analysis of rain fall shocks on school enrollment in Ethiopia.

CHAPTER 4: FOOD AND NUTRITION SECURITY IN MALAWI

INTRODUCTION

1. While poverty is undoubtedly a determinant of hunger, the lack of adequate and proper nutrition is itself an underlying cause of poverty. Hungry and food insecure people may actually find it impossible to build the necessary human, physical and social capital (or assets) that would enable them to raise their welfare level on a sustainable basis (FAO, 2004). Fighting hunger will lead to a reduction in poverty through the enhancement of productivity, the reduction of susceptibility to illness, the improvement of school performance and a greater willingness to undertake riskier but more profitable investments. Poverty reduction is not simply analogous to improving food security, however. While increases in income and poverty alleviation per se will likely promote higher spending in food, achieving food security and proper nutrition may require an additional set of tools and policy considerations whose importance has frequently been underplayed. Box 4.1 presents UNICEF's global conceptual framework on the determinants of improved nutrition.

2. It is within this context that this chapter assesses the food security situation in Malawi to build a profile of food and nutrition security. It then presents an empirical analysis of the determinants of preschoolers' nutritional status, and of households' calorie intake. Lastly, it briefly reviews the links between agricultural production and food security in Malawi.

MEASURING FOOD SECURITY AND MALNUTRITION AT THE HOUSEHOLD LEVEL

3. Like poverty, food security is a cross-cutting, multi-faceted phenomenon, and no single indicator can simultaneously capture its many aspects (Box 4.2). For this reason, a range of alternative indicators are commonly used, which provide complementary information to adequately depict food insecurity in a country. Following Food and Agriculture Organization (FAO), methodology (FAO, 2003), a suite of indicators is used here to assess the state of food insecurity in Malawi, and build a profile of the malnourished and food insecure.

Undernourishment

4. According to FAO figures, (SOFI, 2004) the proportion of the population which is undernourished in Malawi is 33 percent. Though high, this is equal to the mean for Sub-Saharan Africa, and lower than countries such as Zambia (49 percent), Mozambique (47 percent), Zimbabwe (44 percent), Angola (40 percent) and Madagascar (37 percent).

Caloric availability

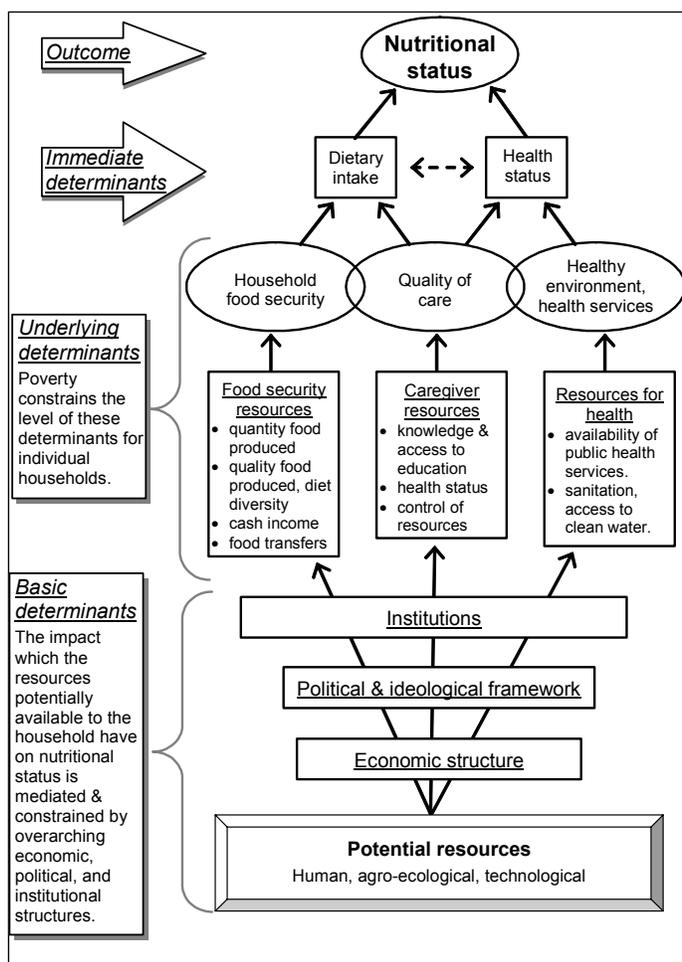
5. Based on the consumption module from the IHS2, the average per capita availability of calories was estimated at 2,366 kcal per day (Table 4.1). This is about 10 percent higher than the 2000-2002 estimate of 2,150 kcal reported by FAO (FAO, 2004). The average per capita availability was 13 percent higher in urban areas (2,630 kcal) than in rural areas (2,332 kcal). Looking at the regional composition, the figures are consistently higher in the Central region.

Also, urban dwellers have consistently higher caloric consumption than their rural counterparts in all regions.

Box 4.1: THE UNICEF CONCEPTUAL FRAMEWORK OF THE DETERMINANTS OF NUTRITIONAL STATUS

The global conceptual framework of the determinants of the nutritional status of children presents a generalized understanding of how undernutrition is the outcome of specific development problems related directly to the dietary intake and the health status of the individual. The quality of these immediate determinants, in turn, is determined by the underlying food security status of the household in which a child resides. However, of equal importance is the availability of health services and a healthy environment and the quality of care the child receives—that is, whether the available dietary resources for good nutrition are used effectively through appropriate caring practices. Sustained healthy and active life is only possible when these underlying determinants—food, health, and care—are each maximized. None of these is sufficient in itself, but all are necessary for good child growth.

The degree to which these three underlying determinants are expressed positively or negatively is a question of resources. These resources include the availability of food but extend much farther to include the physical and economic access that a child or his or her caregiver has to that food; the caregiver’s knowledge of how to use available food and to properly care for the child, the caregiver’s own health status, and the control the caregiver has over resources within the household that might be used to nourish the child. Finally, the level of access to information on and services for maintaining health, whether preventive and curative health services are available, and the presence or absence of a healthy environment with clean water, adequate sanitation, and proper shelter all contribute equally to determining the nutritional status of a child.



The framework links the availability of nutrition resources to a set of basic determinants, which are themselves a function of how society is organized in regard to economic structure, political and ideological expectations, and the institutions through which activities within society are regulated, social values are met, and potential resources are converted into actual resources.

Finally, it is important to recognize from this framework that a household or nation being food secure is not in itself sufficient to ensure the good nutritional status of children and others within that household or nation. It is possible to have poor nutritional outcomes without being food insecure. *Food security* is concerned with physical and economic access to food of sufficient quality and quantity. However, one may have reliable access to the components of a healthy diet, but because of poor health or care (such as poor infant-feeding practices), ignorance, or personal preferences, one may not be able or may choose not to use the nutrients to which one has access. In parallel to food security, one can speak of nutrition security. *Nutrition security* is achieved for a household when secure access to food is coupled with a sanitary environment, adequate health services, and knowledgeable care.

Source: Adapted from UNICEF 1990; Jonsson 1993; and Smith and Haddad 2000.

6. The relatively low level of average per capita calorie availability in Malawi is compounded by an unequal distribution. Although it could be expected that poor households have lower levels of caloric consumption compared with better-off individuals, the magnitude of the difference is disconcerting: poor individuals consume on average 58 percent of the calories of their better-off counterparts. A similar pattern is found across regions and in the urban rural breakdown of the figures.

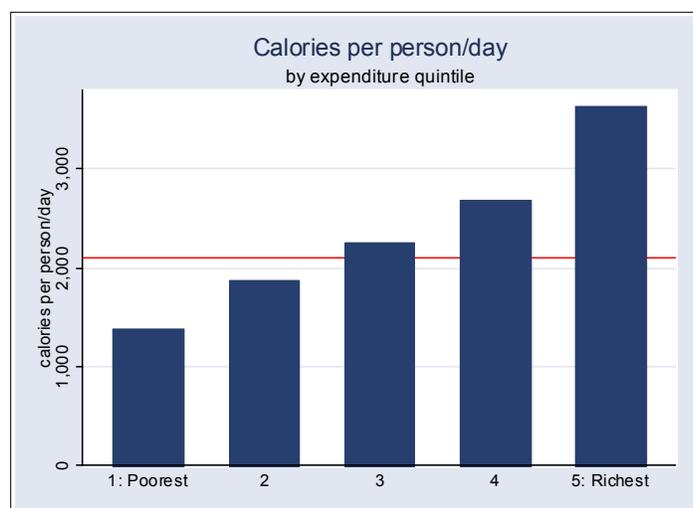
Table 4.1: Caloric availability per capita per day: by region, location and poverty status

	Non-poor				Poor				Total			
	North	Centre	South	Total	North	Centre	South	Total	North	Centre	South	Total
Urban	2,857	3,125	2,676	2,890	1,945	1,923	1,784	1,864	2,547	2,829	2,459	2,630
Rural	2,914	3,071	3,126	3,073	1,738	1,811	1,703	1,746	2,253	2,482	2,210	2,332
Total	2,906	3,080	3,028	3,041	1,751	1,818	1,707	1,752	2,281	2,522	2,239	2,366

Source: National Statistical Office, IHS2

7. Figure 4.1 below also illustrates a strong positive monotonic relationship between levels of caloric availability and increasing levels of wealth (proxied by expenditure quintiles). Again, the difference between poorer and richer individuals is enormous, with individuals in the lowest welfare quintiles consuming about 40 percent of the calories of individuals in the top quintile.

Figure 4.1: Calories per person per day (by expenditure quintile)



Source: National Statistical Office, IHS2

BOX 4.2: KEY CONCEPTS IN FOOD SECURITY

The most frequently-cited definition of food security remains the one proposed almost two decades ago by World Bank, which defines food security as “access by all people at all times to sufficient food for an active and healthy life” (World Bank, 1986). Conceptually, food security can be broken down into four different dimensions: availability, access, utilization and vulnerability.

Undernourishment quantifies food security at the national level by capturing the average availability of food against requirements. Following the FAO, the steps are: i) estimate the per capita dietary food energy supply derived from aggregate food supply data (a number of assumptions are made on the distribution of the food supply across households); and ii) determine a minimum energy requirement threshold. The proportion of undernourished is then defined as that part of the distribution lying below the minimum energy threshold (Naiken 2003). This measure allows for frequent updated comparisons of energy deficiencies across countries and over time.

Food intake is the “gold standard” among food security measures because it directly measures an individual’s energy consumption. Although a number of direct measurement techniques exist to assess food intake, cost and resource constraints often limit their applicability in less developed countries such as Malawi. Instead, the individual’s actual food intake is proxied by household-level measures of food expenditure derived from household surveys. Using data from the IHS2, we constructed the following food insecurity measures related to food intake: household caloric availability, the incidence, depth, and severity of caloric inadequacy, as well as several measures of diet quality and diversity.

Nutritional status is a third common approach to assess dietary deficiencies. This is typically measured using anthropometric indicators of children under 5 years of age. These indicators are easily collected with socio-economic information, so they are well suited to analyzing the determinants of malnutrition, and for monitoring interventions.

Three measures are commonly used to ascertain nutritional status: stunting (low height for age), and underweight (low weight for age) and wasting (low weight for height).

Height-for-age or stunting: Low height-for-age is an indicator of past growth failure, capturing a slowing in the growth of the fetus and the child as compared to a healthy, well nourished child of the same age. As such, it identifies past undernutrition, or chronic malnutrition, but misses short-term changes in malnutrition. It is associated with a number of long-term factors including chronic insufficient protein and energy intake, frequent infection, sustained inappropriate feeding practices and poverty. In children over 2 years of age, the effects of these long-term factors may not be reversible.

Weight-for-height or wasting: Low weight-for-height identifies children suffering from current or acute undernutrition, and is useful when exact ages are difficult to determine. Wasting is the result of a weight falling significantly below the weight expected of a well nourished child of the same height. Causes include inadequate food intake, incorrect feeding practices, disease, and infection or, more frequently, a combination of these factors. Wasting in individual children and population groups can change rapidly and shows marked seasonal patterns associated with changes in food availability or disease prevalence.

Weight-for-age or underweight: Low weight-for-age identifies the condition weighing significantly less than a well-nourished child of a specific age. This index reflects both past (chronic) and/or present (acute) undernutrition.

All three of these indicators are generally expressed in terms of Z-scores, defined as the difference between the anthropometric values of an individual and the median values of a well-nourished reference population for the same age or gender. Children with Z-scores for underweight, stunting or wasting below -2 Standard Deviations are considered moderately malnourished; whereas those with Z-scores below -3 Standard Deviations are considered severely malnourished (see Annex 4A for details on these calculations).

There are also other dimensions that determine the nutritional status of children in a household. For example, the education and beliefs of caregivers, or their systematic absence from the household (e.g., for work-related reasons), as well as sanitation, health, and child care practices may all help determine whether children are able to benefit from the full potential of a given level of food availability.

Vulnerability (an inherently dynamic concept which expresses both *ex ante* frailty and the probability of *ex post* outcomes) is a final approach to food security, which is difficult to measure precisely (Dercon and Krishnan 2000). Subjective measures based on respondents’ perception of their food security situation are commonly used to approximate this state of vulnerability. Vulnerability was treated in greater depth in Chapter Three. For this chapter, we focus on a “self assessment” indicator of vulnerability derived from the IHS2 through asking the head of household the following Food Adequacy Question (FAQ): “Concerning your household’s food consumption, which of the following is true?”: 1) it was less than adequate for household needs; 2) it was just adequate for household needs; and, 3) it was more than adequate for household needs.” This indicator may also capture a series of latent characteristics of the respondent, which makes comparability across (groups of) individuals very problematic.

8. The minimum energy requirement threshold is calculated at the household level using age- and sex-specific caloric requirements taken from the 2001 FAO/WHO/UNU Expert Consultation Interim Report on Human Energy Requirements (FAO/UNU/WHO, 2001).⁶⁴ At the national level, 35 percent of households did not obtain sufficient calories, which is quite similar to the FAO 2000-2002 figures of 33 percent. This share is marginally higher in rural areas (36 percent), and peaks in the Southern region, where the average calorie inadequacy reaches 40 percent. As expected, a higher concentration of the inadequacy indicator is found among the poor, with a national incidence of over 60 percent. In the majority of cases, urban dwellers have lower incidence of inadequacy levels than rural individuals. The only notable exception is urban non poor in the Southern region, which exhibit significantly higher caloric inadequacy.

Depth and severity of hunger

9. A measure of the incidence of hunger gives equal weight to a household just below the minimum threshold and a household falling far below the threshold, although their level of deprivation and their chances reaching food secure status are quite different. Two different measures⁶⁵ account for the distance of households from caloric adequacy, proposed by Foster, Greer and Thorbecke (1984). The *depth of hunger*, or the hunger gap, is a measure of the sum of each individual's distance to the minimum caloric requirement. The *severity of hunger* index gives more weight to individuals further away from the threshold. We find no re-ranking of geographic areas when using these alternative measures as compared to the incidence of caloric inadequacy, suggesting that caloric shortfalls are not significantly different across regions. Annex 4B tabulates these findings in detail.

Self assessment of food adequacy

10. In line with empirical evidence for other countries,⁶⁶ the subjective measure gives somewhat different results to objective measures, as depicted in Figure 4.2 below. Overall, the share of households which consider their food consumption inadequate is much higher (56 percent) than the share of households with estimated caloric availability below the minimum threshold (35 percent). Urban households report feeling more food insecure than rural ones (respectively 48 percent versus 58 percent), which mirrors the objective measures (respectively, 28 percent versus 36 percent).

11. Among the rural poor, those in the North appear to have a much lower share of self-assessed food inadequacy (39 percent feel they have inadequate food, versus the actual 58 percent). This contrasts with the other two regions, where more people perceive inadequacy (70 percent for Central, 69 percent for South) than the objective estimate (56 percent for Central and 65 percent for South). It is hard to pinpoint why the North feel better nourished, and further investigation may lead to some useful insights on the factors driving different perceptions across regions.

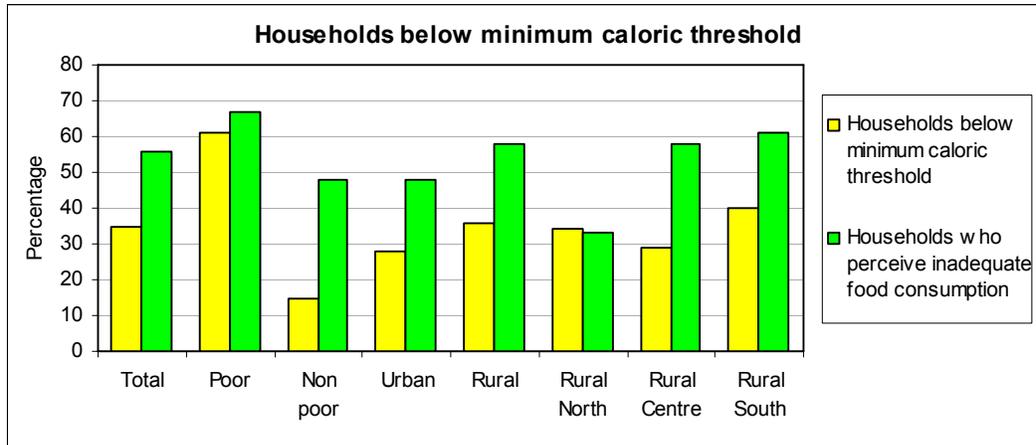
⁶⁴ The high side of light physical activity (1.6*BMR) is assumed for all individuals, and the requirement used corresponds to the mean of the weight/requirement range for appropriate age and sex groups.

⁶⁵ See Annex 4B for a definition of these poverty measures.

⁶⁶ See for example, Pradhan and Ravallion (1999); Ravallion and Lokshin (1999); Carletto and Zezza (forthcoming).

Nevertheless, as we have seen in Chapter Two, this result is not limited to perceptions of food security, and is consistent across various dimensions of well being.⁶⁷

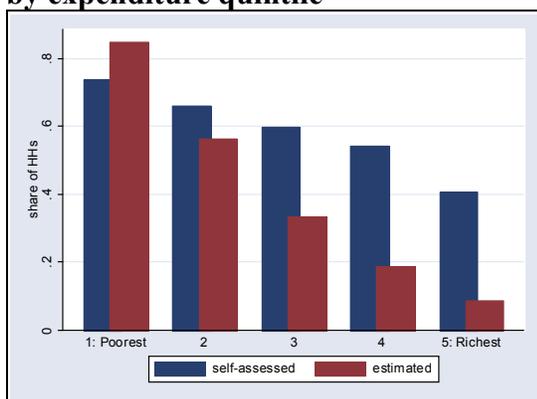
Figure 4.2: Self-reported versus Estimated Inadequacy in Food Consumption



Source: National Statistical Office, IHS2

12. The gap between objective and subjective measurements increase with welfare: the share of households which *perceive* (i.e. subjective) their food consumption as inadequate decreases with wealth, but the change is less dramatic than that observed using the *estimated* (i.e. objective) food inadequacy (Figure 4.3). For instance, while only a little over 10 percent of the households in the top wealth quintile had estimated caloric consumption below the norm, over 40 percent in the same quintile perceived they were consuming inadequate food quantities. As shown in Carletto and Zezza (forthcoming), economies of scale in consumption and equivalence scales assumptions underlying the objective measure may be partly responsible for these differences. Different preferences across welfare quintile may also be at play.

Figure 4.3: Self assessment of food inadequacy versus estimated caloric shortfall by expenditure quintile



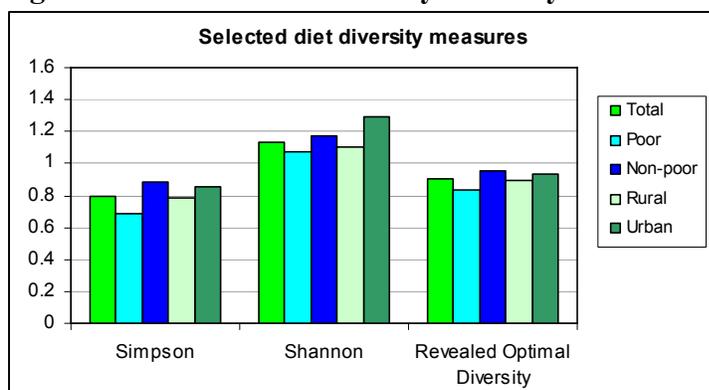
Source: National Statistical Office, IHS2

⁶⁷ Similar regional differences are found using different subjective poverty indicators as described in Devereux et al., (2006) based on the same survey data (see Box 2.7).

Dietary diversity

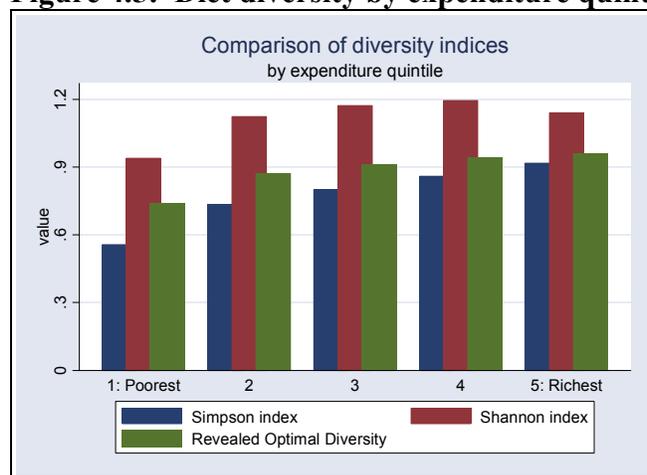
13. Innumerable methods have been proposed in the literature to attempt to capture the qualitative dimension of people's diets. A simple accounting of dietary diversity at the household level based on the shares of specific (groups of) food items is a common approach. We estimate five different indices of dietary diversity (for definitions and a full break down of results, see Annex 4C). As can be seen in Figure 4.4, all indices indicate that, on average, urban households have more diverse diets than rural households. While no clear pattern is found across different regions (not shown), all indices show differences between poor and non-poor households at both national and regional levels. Similarly, Figure 4.5 shows that the dietary diversity indices increase monotonically with increases in wealth (with the exception of the Shannon index in the top quintile).

Figure 4.4: Measures of dietary diversity in different households



Source: National Statistical Office, IHS2

Figure 4.5: Diet diversity by expenditure quintile



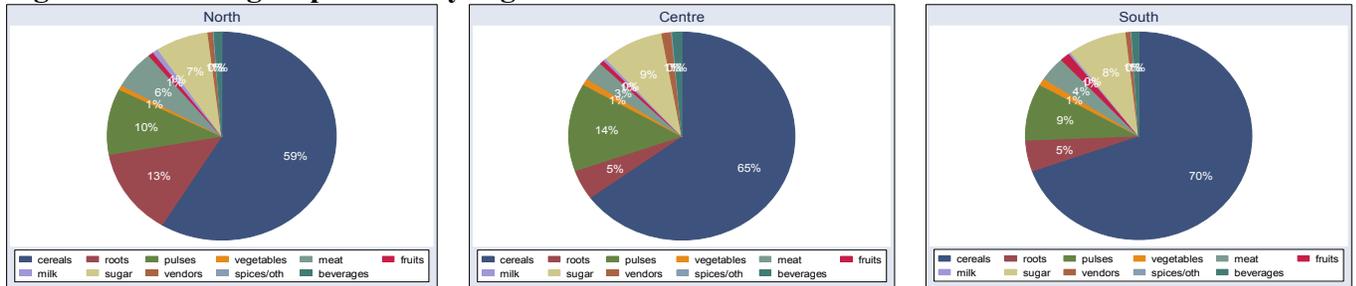
Source: National Statistical Office, IHS2

14. A somewhat different perspective on diversity is given by looking directly at the share of different food groups in total caloric consumption. The Malawian diet is dominated by cereals, which comprise over 60 percent of total calories (60 and 65 percent respectively in urban and rural areas). The share of cereals in total food expenditures increases from 57 to 63 to 68 percent

as we move from the North to the South of the country (Figure 4.6). On average, 93 percent of cereal consumption derives from maize, with slightly more cereal diversity in the South (92 percent maize) and least in the North (95 percent maize). This over reliance on a single crop permeates the political, social and economic discourse on food security in Malawi.

15. In terms of other foods, a larger share of pulses are consumed in rural areas and in the central region, while tubers like cassava are consumed more in the North, as well as more fruit. Also, the consumption of sugar in urban areas is much higher than in rural areas.

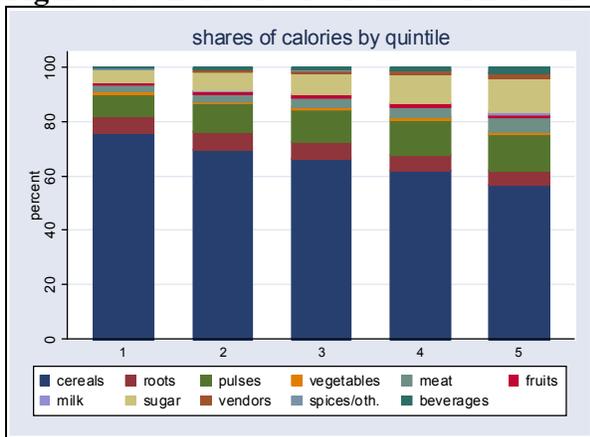
Figure 4.6: Food group shares by region



Note: The definition of North region, Central region, and South region includes urban areas.
Source: National Statistical Office, IHS2

16. Figure 4.7 presents diet composition by food groups across expenditure quintiles. As expected, the share of staple consumption declines at higher levels of welfare, dropping from 77 in the poorest quintile to 57 percent in the top quintile. Consumption of pulses also appears to increase with income. The other notable difference is consumption of sugar and meat, which increases monotonically across expenditure quintiles, and is largely associated with shifting diets in urban areas. Notably, urban consumption of sugar, comprising 16 percent of calories, is double the level observed in rural areas.

Figure 4.7 Share of cereals in total household caloric intake (by expenditure quintile)



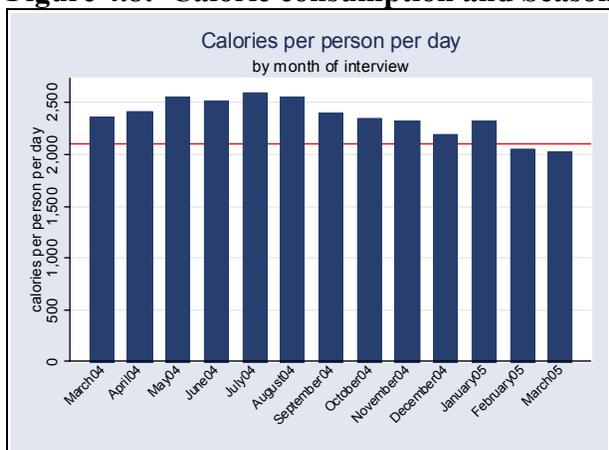
Source: National Statistical Office, IHS2

Seasonality issues in Food Security

17. There is a strong element of seasonality in the nature of food security in Malawi. This stems from the importance of home production in total food consumption, combined with the lack of irrigation and the fact that the vast majority of landholdings are too small to cover household needs. Even minor water deficits can have devastating effects on crop yields—especially when shortages occur during the flowering stage of the staple crop, maize—with dramatic repercussions on the incidence and severity of food shortages, and in turn on the persistence of child malnutrition.

18. The seasonality of food consumption is clearly shown in Figure 4.8. Apart from a one-time increase in consumption in December linked to Christmas celebrations, average per capita daily caloric consumption is higher during the months following the harvest (May-August), and then begins to fall as stocks become depleted. It reaches its lowest point in March, right before harvest. Not surprisingly, maize prices are lowest during the harvest months, and then rise sharply in the months of home production scarcity, when the share of households dependent on market purchases increases. The non-poor decrease their consumption of non-maize calories due to the higher maize prices, accounting for the more pronounced drop in their total calorie consumption compared to poor households (Figure 4.9). Because of the resulting spikes in the price of maize during the lean season, the average Malawian slightly adjust downwards maize consumption while still spending significantly more, on average (Figure 4.10).

Figure 4.8: Calorie consumption and Seasonality



Source: National Statistical Office, IHS2

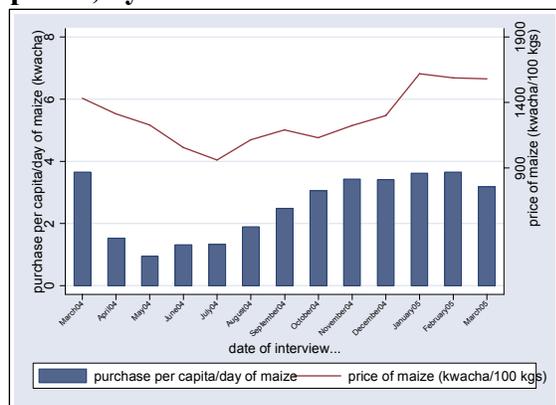
Figure 4.9: Calorie consumption and Seasonality, by poverty status



Source: National Statistical Office, IHS2

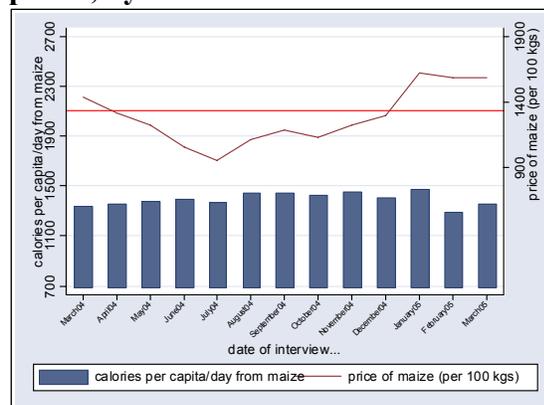
19. Maize producing households can be divided into two groups: seller and non-sellers. Sellers have a marketable surplus, unless they are forced to sell because of lack of cash, while non-sellers do not have a marketable surplus, and are either self sufficient, or must go to the market to supplement own production. Figure 4.12 plots the share of poor and non-poor households buying maize for all non-sellers (defined as those who did not sell any maize during the survey period). The solid line is the average monthly trend in maize prices. A clear picture emerges: the share of households who buy maize increases steadily throughout the year, reaching over 50 percent for both poor and non-poor households at the height of scarcity. There is virtually no difference in the proportion of buyers across welfare lines. When looking at rural households only, however, there is a clear differentiation between poor and non-poor households: proportionately more poor rural households buy maize precisely when prices are at their highest. Although poor households are the least able to absorb the costs, they remain the most exposed to seasonal price fluctuations.

Figure 4.10: Maize expenditures and prices, by month



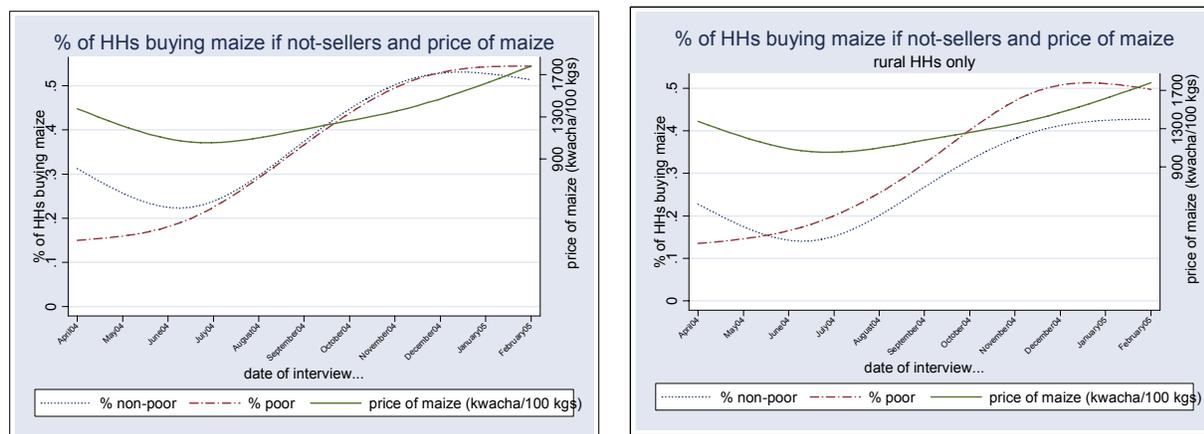
Source: National Statistical Office, IHS2

Figure 4.11: Calories from Maize versus prices, by month



Source: National Statistical Office, IHS2

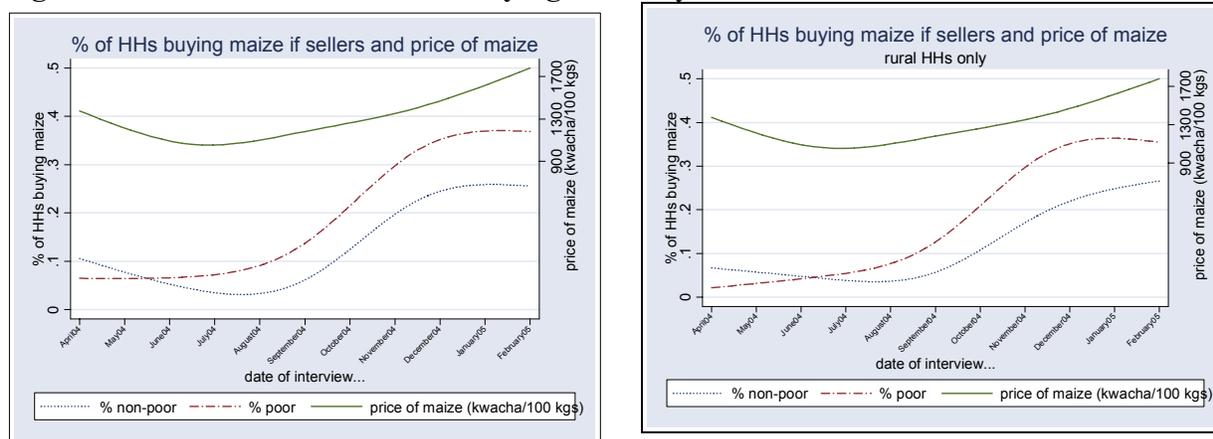
Figure 4.12: Shares of households buying maize by month



Source: National Statistical Office, IHS2

20. Even households that sold maize re-enter the market at a later stage as buyers. While the share of maize-selling households buying maize at any point in the crop year is substantially lower than the share of non-sellers, even among sellers the share of households buying maize increases along with rising maize prices and scarcity. Thus, assuming that sales take place shortly after harvest, it appears that most households sell cheap and buy expensive. Again, and most importantly, the share of poor households buying maize when prices are high is always higher than that of non poor households (Figure 4.13).

Figure 4.13: Shares of households buying maize by month



Source: National Statistical Office, IHS2

21. The timing for selling maize is clearly important. Ideally, households would store part of their production for consumption or sale during the months of scarcity when market prices are higher, yet many sell their maize earlier, at lower prices. Liquidity constraints might account for this—households have cash needs (e.g., to buy other food and non-food products, and/or fertilizers during planting season), and may have no other means by which to finance these expenses. Households may also lack the necessary storage facilities to keep maize for extended periods of time.

22. Different policy interventions may be appropriate to address the different motives for the *selling cheap and buying expensive later* phenomenon, such as the promotion of improved storage facilities or the availability of micro-credit programs to help smooth cash flows during the year. Unfortunately, we are unable to separate the relative importance of the different factors from our data to inform targeted policy interventions, and this warrants further study.

Coping via changes in consumption patterns

23. Households employ a number of coping mechanisms to survive through the lean season, and the previous chapter on vulnerability explores these issues in depth. Here, we limit ourselves to the patterns in consumption of maize and maize substitutes.

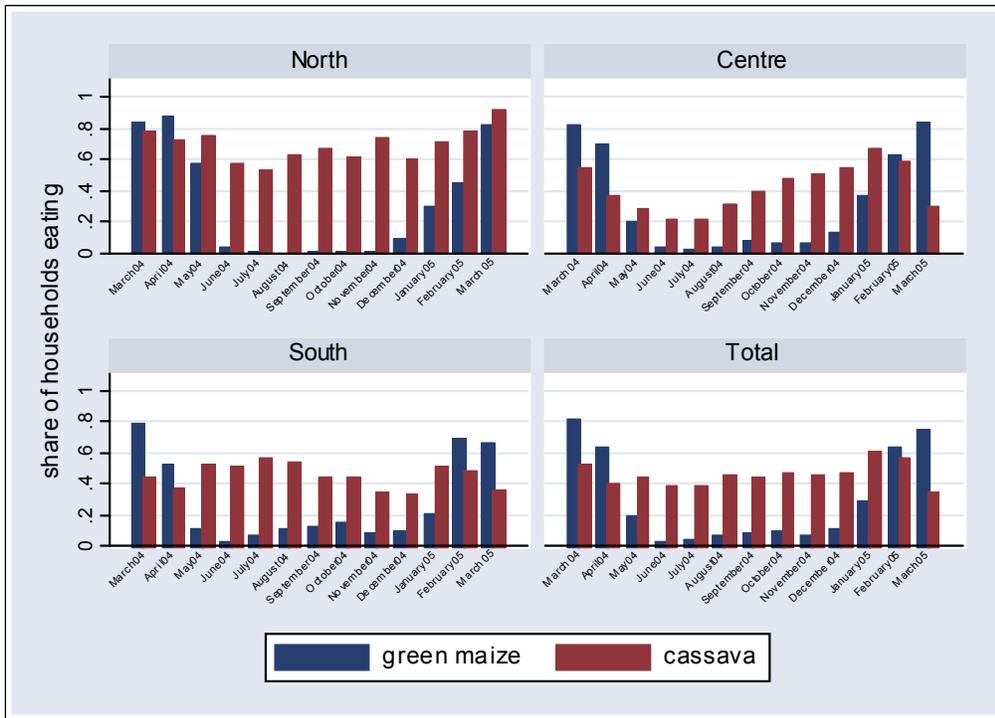
24. As discussed earlier, maize is by far the most important food in Malawi. Given decreasing average caloric availability at the household level as the lean season progresses, we would expect the consumption of maize to decrease as maize prices rise, with households substituting calories from other sources. However, Figure 4.11 above shows that caloric consumption from maize remains relatively stable, compared to the fluctuation in total caloric consumption illustrated in Figure 4.8 above. That is, households spend increasingly extra to maintain the same level of calories from maize. This holds true for both poor and non-poor households. However, the poor maintain significantly lower levels of caloric consumption from maize than the non-poor.

25. While maize consumption remains relatively stable among households during all months of the year, households change other aspects of consumption patterns. During the lean months, other, less desirable foods are consumed, particularly green, or unripe maize (Figure 4.14). In March and April, 2004, and February and March of 2005, the period preceding the harvest, the share of households consuming green maize jumped to over 50 to 60 percent of households. This is true across all regions, and can be considered as a symptom of distress consumption, with negative consequences in terms of overall yields of the maize harvest.

26. Cassava has frequently been promoted as an alternative food during the maize lean months,⁶⁸ and consumption of cassava is widespread throughout the country. Variations by region are evident, however. Cassava consumption is particularly evident and stable over time in the North, the region with the greatest production of cassava, and where it is already a culturally accepted part of the diet. Consumption in the North increases as the lean season progresses. Different patterns and somewhat counterintuitive patterns are seen in the South and Center. In the South, consumption declines beginning from its peak in August, only to jump again in January. In the Center, consumption gradually increases from a low in June to the peak in January, with consumption then falling during the lean period. As we shall see in Chapter Seven, cassava is much less commonly grown in these regions, and it is conceivable that less is available for consumption, particularly as the lean season progresses.

⁶⁸ See, for example, Chirwa and Milner (1999) on the promotion of cassava in food security projects and Peters (1999) on a discussion of the cassava debate.

Figure 4.14: Seasonal consumption patterns of cassava and green maize, by month and region



Note: The definition of North region, Central region, and South region includes urban areas.
Source: National Statistical Office, IHS2

Anthropometric measures

27. As described in Box 4.1, three standard anthropometric measures of malnutrition: are stunting, underweight and wasting. Chronic malnutrition, which is measured by stunting, is the central issue analyzed in the profile of the food insecure in the next section. Here, we briefly review these anthropometric measures for comparison with the other food insecurity measures discussed above.

28. Table 4.2 shows the extent to which malnutrition, measured with all three anthropometric indices, is pervasive in Malawi. At the national level, stunting affects 44 percent of children aged 6-59 months, with little differences between urban and rural areas, or among regions, though urban areas generally have moderately lower malnutrition than rural areas, by all three measures. The incidence of severe stunting is over 18 percent, with some geographical differentiation. Notably, the highest incidence is in the Central region. Similar trends are observed for underweight and wasting. This contrasts with the Central region's caloric intake, which is higher than that in the North and South (Table 4.1 above). As we have seen, food is only one of the necessary input in the "nutrition production function", with other factors also determining a child nutritional status, including sanitation, feeding practices, mother's knowledge of health and nutritional matters, diet quality and composition, and non-food basic need expenditures. We thus need to look at other characteristics from a regional dimension in order to find the answer to this paradox.

Table 4.2: Nutritional status of children aged 6-59 months (by region and location)

	Stunting		Underweight		Wasting	
	Moderate (-2SD)	Severe (-3SD)	Moderate (-2SD)	Severe (-3SD)	Moderate (-2SD)	Severe (-3SD)
National	43.7	18.4	18.3	3.5	2.2	0.4
Urban	40.0	14.8	17.2	3.5	1.8	0.7
Rural	44.1	18.8	18.4	3.5	2.2	0.4
North	39.6	18.0	16.1	2.6	2.8	0.2
Centre	47.9	20.9	20.0	4.7	1.8	0.3
South	40.8	16.2	17.2	2.7	2.3	0.6

Source: National Statistical Office, IHS2

Note: The definition of North region, Central region, and South region includes urban areas.

29. A comparison of our stunting estimates with results from the IHS1 reveal a dramatic drop in chronic malnutrition levels. However, in view of conflicting evidence from other surveys and the critical food security situation faced by the country over the past few years, it is difficult to take this improvement at face value. In fact, the IHS1 figure appears not to be in line with other available evidence. Thus, despite efforts to make the IHS2 estimates comparable with the IHS1 figures,⁶⁹ we discourage direct comparison of the two estimates. In fact, survey data from three MDHS surveys covering the period 1992 to 2004 show a different trend (Table 4.3). The last three columns show that the incidence of stunting has remained more or less constant over time, at around 50 percent. The regional and urban/rural ranking is consistent across the three surveys. However, there appears to be a slight increase in the incidence of stunting in urban areas over time. The preliminary estimates of stunting from the December, 2005 Malawi Nutrition Survey (MNS), representative for the rural population only, at 43 percent is more similar to the IHS2 than to MDHS 2004.

30. Table 4.4 shows that while the underweight figures from the IHS2 are lower than most other countries, the level of stunting in Malawi is among the highest in the region. Such exceptionally high levels of malnutrition have persistent long-term impacts, as malnutrition diminishes future productivity, thus making these children more vulnerable to poverty traps in the future.

Table 4.3: Moderate stunting, by survey

	IHS1 1998	IHS2 2005	MDHS 1992	MDHS 2000	MDHS 2004	MNS 2005
Total	59.1	43.7	49.2	49.0	47.8	na
Urban	54.1	40.0	35.2	34.2	37.8	na
Rural	59.5	44.1	50.9	51.2	49.2	43.0

Sources: own calculations; DHS 2004; MNS 2005

⁶⁹ For more details, see Annex 4D.

Table 4.4: Comparing malnutrition in selected countries in Sub-Sahara Africa

	Stunting	Underweight
Malawi (2005)	44	18
Zambia (2002)	47	28
Mozambique (1997)	36	26
Tanzania (1999)	44	29
Zimbabwe (1999)	27	13
Kenya (2003)	30	20
Uganda (2001)	39	23

Source: World Development Indicators website, February 2006, and own calculations.

31. In sum, the composite picture that emerges from the different indicators shows that as one would expect, a much higher share of the poor are below the calorie threshold, and the poor have less diverse diets. Rural households are more food insecure, displaying higher levels of malnutrition, less diverse diets, and higher rates of malnutrition among children than urban ones. On the other hand, the regional breakdown suggests a more complex picture: the Central region has the highest level of caloric availability, but it also has the highest incidence of chronic child malnutrition, as measured by stunting. The diversity of the diet is roughly constant across regions when using the simple food count index, while the South shows the highest share of cereal consumption, followed by the Centre and then the North.

A PROFILE OF MALNUTRITION IN MALAWI

32. This section builds a profile of food and nutrition insecurity in Malawi. Given the chronic nature of malnutrition in Malawi we focus on stunting, which reflects the long term outcome of a combination of factors such as inadequate food intake, deficient sanitary conditions, health and child care provision and poor nutritional knowledge. We also present the results for underweight and wasting in most cases. The measurement of child malnutrition is very important as it helps detect at an early stage potentially serious impediments to human capital formation. This in turn can have important consequences in the skill formation of the future generation of workers, increasing the vulnerability to chronic illness, and, more generally, on the long-run economic growth potential and poverty alleviation strategies of the population.

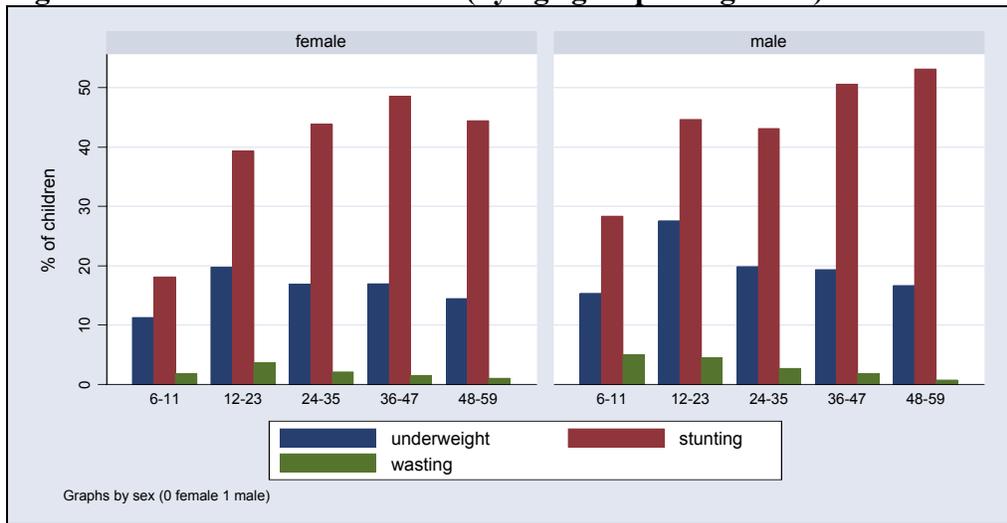
33. The downside to using child malnutrition as our food security indicator is that it excludes those households (46 percent of the total, and 41 percent of the poor) that do not have children aged 6-59 months. For this reason, we complement the anthropometric measure with a measure of caloric availability. More detailed results of our analysis are presented in Annex 4D.

34. Figure 4.15 shows that boys have a higher incidence of stunting than girls across age groupings. For both genders, the older a child, the higher the incidence of stunting, with the exception of girls in the oldest category. Underweighting and wasting are also higher for boys, but show a different trend. Both indicators peak in the 12-23 month category, and then decrease with age.

35. The data also show that the incidence of stunting decreases with the mother's (or guardian's) level of education, but only after a minimum of eight years of schooling (see Figure 4.16). This is also true for underweight and wasting. The incidence age of the mother or guardian

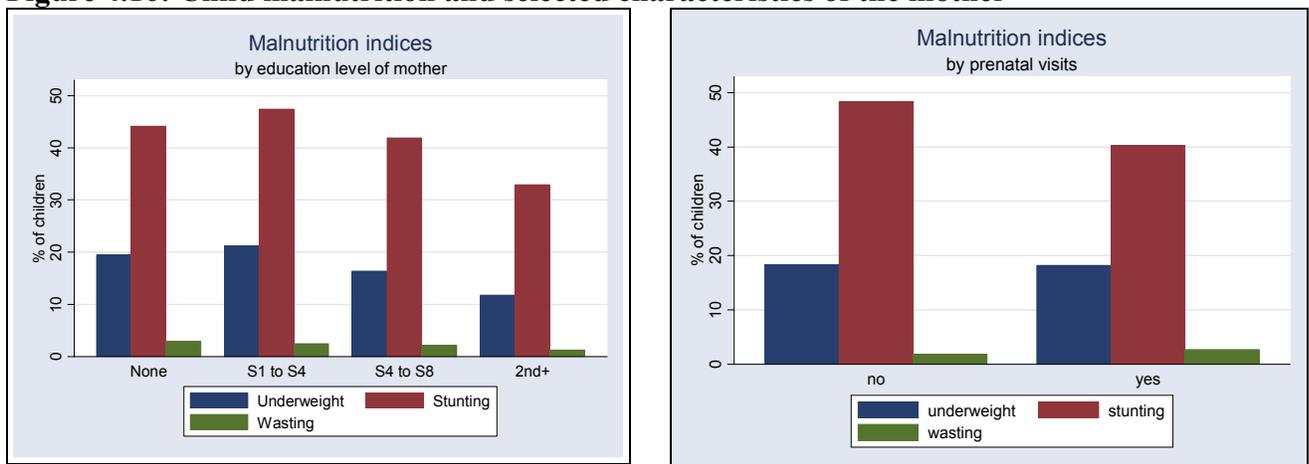
appears to be less of a factor in stunting, except after age 50, when stunting rapidly increases with the mother/guardian’s age. Birth order does not appear to have much impact on stunting. However, the length of time between births does appear to make a small difference: children born more than 24 months apart from their nearest sibling have a lower incidence of stunting than those born closer together (not shown). Prenatal visits appear more important in reducing the incidence of stunting (Figure 4.16).

Figure 4.15: Malnutrition indices (by age group and gender)



Source: National Statistical Office, IHS2

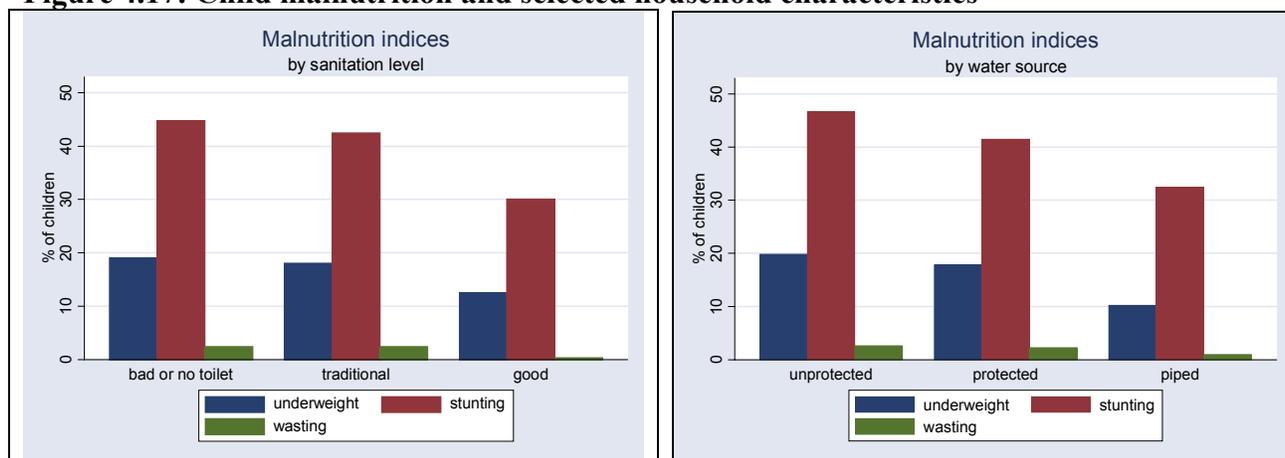
Figure 4.16: Child malnutrition and selected characteristics of the mother



Source: National Statistical Office, IHS2

36. A number of household characteristics appear to be correlated with the incidence of stunting. Figure 4.17 illustrates the effect of sanitation and water supply. Children living in households with good sanitation and have a lower incidence of stunting than those children with bad sanitation (30 percent compared to 44 percent), and those with a piped water source are less likely to be stunted than their peers with an unprotected water source (32 percent vs 47 percent).

Figure 4.17: Child malnutrition and selected household characteristics

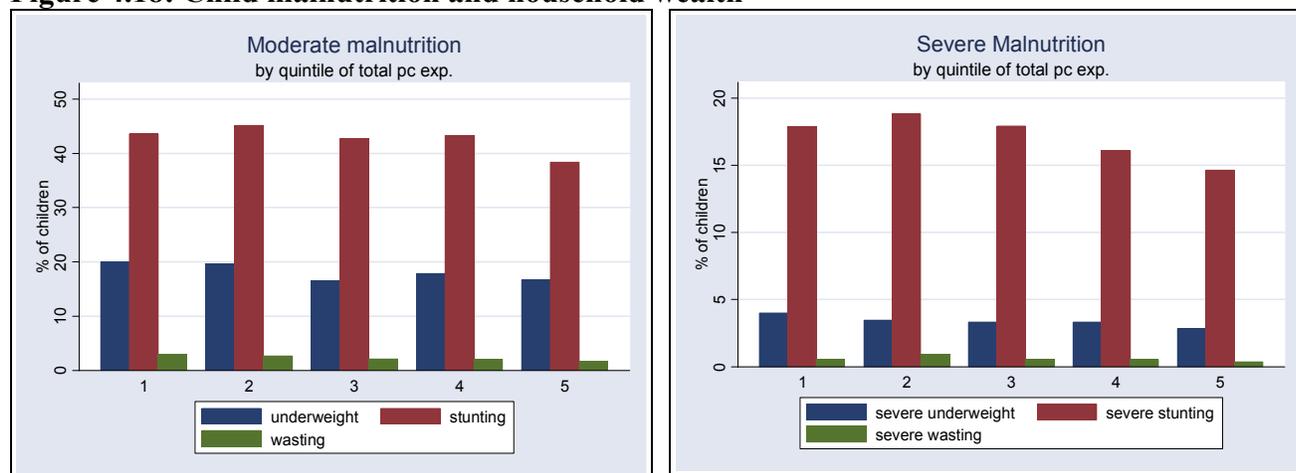


Source: National Statistical Office, IHS2

37. In contrast, there is no clear relationship between either moderate or severe malnutrition with wealth (proxied by total per capita expenditure). While the incidence of moderate stunting is lower among children in the top wealth quintile, as compared to the lowest, the difference is not large (43 to 38 percent) and is not monotonic across quintiles (Figure 4.18).⁷⁰

38. There are systemic differences in malnutrition rates between the regions. Only in the Central region, the malnutrition figures display a clear downward trend with wealth quintiles, as well as showing an overall substantial change between the first richest quintile and the fifth poorest one (51 to 41 percent, not shown). Controlling for urban/rural location, the Center exhibits the highest incidence of malnutrition, as seen in Figure 4.19. Moreover, the incidence of stunting in the wealthiest quintile of the Centre is not lower than the poorest quintile in the North and South (not shown).

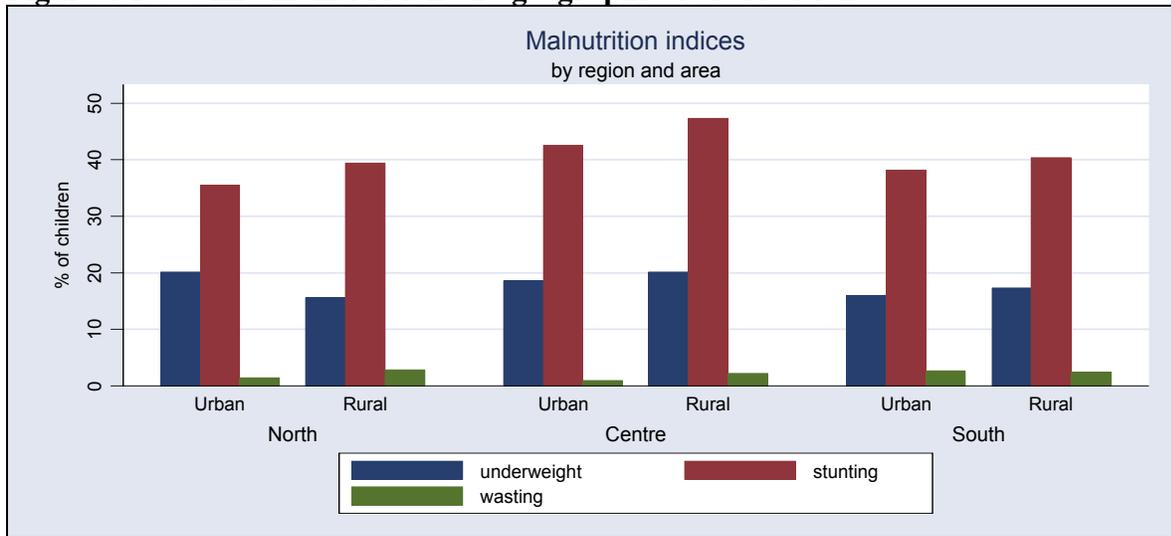
Figure 4.18: Child malnutrition and household wealth



Source: National Statistical Office, IHS2

⁷⁰ One would not expect a strong relationship between wealth and wasting (a measure of acute malnutrition), since the latter is strongly determined by stochastic conditions (unforeseen environmental factors and disease).

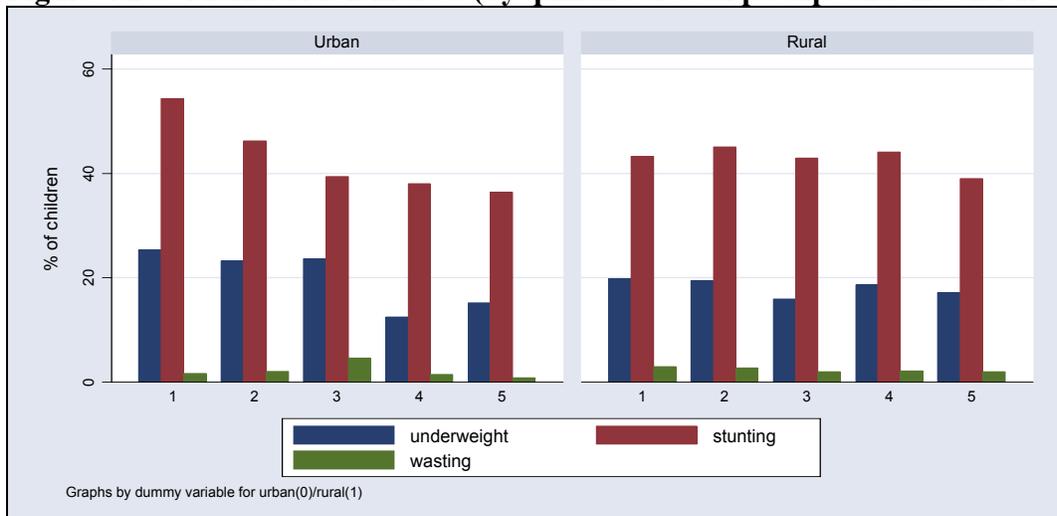
Figure 4.19: Child malnutrition and geographical distribution



Source: National Statistical Office, IHS2

39. The urban rural cut of the data (Figure 4.20) shows that rural households display a relatively constant level in child malnutrition, whereas urban households exhibit a large drop from 57 percent to 38 percent in the incidence of stunting as the wealth level increases. Despite this drop, the figures illustrate that even among the wealthiest quintile of urban households, stunting remains a serious problem: more than a third of all children are stunted.

Figure 4.20: Malnutrition indices (by quintile of total pc exp. and urban rural divide)



Source: National Statistical Office, IHS2

40. In sum, the general profile of malnutrition in Malawi shows that the incidence of stunting, underweighting and wasting is higher in older children. Stunting decreases with prenatal visits and with the mother's (or guardian's) level of education, but only after a minimum of eight years of schooling. Birth order does not appear to impact stunting, whereas the size of the age gap does make a small difference. Living in households with better sanitation and protected water lowers the incidence of stunting. Rural households show a fairly constant trend

in child malnutrition, whereas urban households exhibit a large drop in the incidence of stunting as the wealth level increases.

THE DETERMINANTS OF CHILD MALNUTRITION AND HOUSEHOLD CALORIC AVAILABILITY

41. This section builds on the malnutrition profile to explore the determinants of malnutrition in a multivariate setting. This allows us to ascertain which aspects of the profile described above have a greater impact on the nutritional status of preschool children. Then we model the determinants of daily per capita intake at the household level. In both multivariate analyses, special attention is given to the role of income and its potential endogeneity with respect to the dependent variables of interest, namely child stunting and household caloric availability.

Model specifications for child malnutrition

42. The model employed in the following analysis is a reduced form linear demand equation for child health status, estimated using Two-Stage Least Squares (2SLS), because we instrument income and participation in the targeted nutrition program (for children under 5 years) to correct for potential endogeneity (see below). The model is specified as follows:

$$[3.1] \quad z - score = \alpha_i + \beta_{1i}C_i + \beta_{2i}P_i + \beta_{3i}H_i + \beta_{4i}I_i + \beta_{5i}G_i + \beta_{6i}O_i + \varepsilon_i$$

Model Variables

43. Our choice of dependent variable is the z-score (height for age), because it best captures the cumulative effect of children's past nutritional deficiencies.⁷¹

44. As specified in Equation [3.1] above, our model controls for a range of determining factors in child malnutrition: children characteristics (C), parental (P) and more general household (H) characteristics, income (I), geographical/spatial variables (G), and a set of other (O) controls, e.g. dummies for the month of the interview. These factors are briefly reviewed below, with reference to the statistical properties with which they appear in the sample. The table in Annex 4D summarizes all the variables used in the econometric analysis.

45. *Child characteristics:* Among the child characteristics, we include the gender and age (expressed in months)⁷² and an additional variable on birth spacing to capture the effect on malnutrition of multiple children from the same mother.⁷³ Shorter birth spacing is usually associated with higher rates of malnutrition: closely spaced pregnancies may imply the inability of the mother to have enough time to regain lost fat and nutrient stores from a previous

⁷¹ As discussed in Box 4.1, the z-score (our dependent variable) is expressed in terms of standard deviations (sd) from the median height-for-age values. Hence, the regression coefficients can be interpreted as the sd change associated with a unit increase in a given right-hand-side variable.

⁷² The age of the child was also entered in quadratic form to allow for non-linear effects.

⁷³ The birth-spacing variable is constructed as a dummy taking the value of one for all children who were born less than twenty four months before their older siblings. We are aware of the potential endogeneity of this variable, as well as of any variable describing the demographic composition of the household. However, the results are robust to alternative specifications.

pregnancy. An additional negative impact of close birth spacing derives from the possibility of reduced mother's time for proper childcare and feeding. We also include the season during which the child was born: our maintained hypothesis is that births occurred in the rainy season are likely to be positively associated with diseases such as malaria of either the child or the (lactating) mother, and more intensive household labor demands. Both these events are in turn more likely to have a negative impact on the incidence of malnutrition episodes at a later stage in children's lives.

46. *Parental and demographic characteristics:* We include the gender and age of the household head,⁷⁴ as well as the mothers' education and religion, and a dummy for whether the mother attended prenatal health clinics. Among the variables outlined above, the mother's educational attainment is considered a central factor affecting the quality and quantity of children's nutritional status (see Handa 1996; Christiaensen and Alderman 2004 among others). Here we define the mother's education by the number of years corresponding to the attainment of a certain qualification. In particular we split the education variable into three dummies: no qualification (the reference category), a qualification corresponding to eight years of education, and a dummy for any educational qualification corresponding to more than 8 years of schooling.

47. *Household characteristics:* To control for the composition of the household we use the number of children under five, and the number of women over fourteen years of age. The former is expected to capture any possible "crowding" effect (with small children "competing" for limited time and household resources), and the latter is expected to pick up the effect of better nutritional and health care deriving from the presence of several women and potential care-takers in the household. In order to account for the conditions in which children are raised, we also include variables describing the characteristics of the dwelling, with respect to the presence of improved toilet, access to piped or protected water, and improved roofing.⁷⁵ Finally, we include the amount of land owned by the household, to control for households' food production potential.

48. *Community characteristics:* We use two community level variables: the proportion of households with children participating in the Targeted Nutrition Programs (TNP) for under-5 year old proxies for household exposure to nutritional information,⁷⁶ and the proportion owning a radio or a television to proxy for exposure to more general information.

⁷⁴ The household's head gender variable is split to allow for both female headed households *de jure* (where women are considered the legal and customary head of the household, which includes unmarried women, those who are divorced, separated or widowed) and *de facto* (those where the male is absent for more than 50 percent of the time). Following Kennedy and Peters (1992) we use this differentiation to test whether child feeding practices and other child nurturing behaviour differ across these groups.

⁷⁵ To minimize potential endogeneity problems of these variables at the household level, all the variables above were proxied using mean values for the characteristics of households in the same community (excluding the respondents' answer). These are defined as the percentage of households in the community with improved toilet, the percentage with access to piped or protected water, and the percentage of households with improved roofing.

⁷⁶ The Targeted Nutrition Program (TNP) aims at providing initial treatment to severely malnourished children under five through food and nutrition training for mothers and guardians. Due to the non-randomness of the participation to an under-five program with respect to the malnutrition outcome, we need to instrument this variable to account for its potential endogeneity.

49. *Geographical/spatial variables:* We also include two district-level rainfall indicators to account for the effects of weather on agricultural production and on households' ability to provide for a portion of food consumption through own production. These indicators are the absolute level of rainfall (in millimeters) registered in the agricultural season prior to the survey, and the coefficient of variation of rainfall for the period 2000 to 2004. The district level real price of maize (in kwacha per kg) was also included to control for the effect of spatial difference in the price of the main staple crop on households' purchasing power.

50. *Income:* We use per capita expenditure to proxy for income, as suggested in the literature (Deaton and Grosh, 2000). Since this variable is typically considered endogenous in malnutrition analysis, we instrument it to correct for this potential endogeneity.⁷⁷ The identifying instruments include a wealth index on durable assets constructed using principal component analysis and the highest educational level among household's adults other than the mother.

51. It is widely accepted in the literature on malnutrition that the underlying causes of malnutrition for infants is likely to differ from those of older children.⁷⁸ Typically, nutritional and resource requirements vary with age in response to changes in diet and activities. For example, the importance of mother's care and nurturing practices are assumed to have an age dimension: the quality and choice of older children nutritional intake depends on mother's personal characteristics much more than that of infants who are more likely to be breastfed. Similarly, environmental factors such as sanitation and water source, as well as income, are assumed to affect more the nutritional status of older children. We assess whether age differences matter by dividing the sample into two groups and running separate regressions: between six and twenty four months of age, and between twenty five and fifty nine months.⁷⁹

Results of the Analysis

52. The discussion focuses on the results of our regression using the full sample (i.e. without age differentiation), but also highlights the main differences arising from separate split sample regressions. The summary results of the full sample regression are summarized in Figure 4.21. Full results, are presented in Annex 4D. In line with the interpretation of the z-score (higher z-score equals a reduction in stunting, see Box 4.1), variables that have a positive impact on z-score will reduce stunting.

53. Consistent with results from other countries in Sub-Saharan Africa, we found that the risk of stunting in pre-school children increases up to 24 months and decreases thereafter. For children under two, the risk of malnutrition is highest around 18-20 months, whereas among the older children stunting is found to peak at 37 months. Boys' nutrition is found to be 0.16 z-scores lower than girls'. Under the age of two, this difference is much larger; boys z-score is an estimated 0.26 lower than the average girl score. This result replicates that found in other studies

⁷⁷ Income may be affected by a child malnutrition if that malnutrition (and the need for special care) prevents parents from working or results in greater medical expenditure.

⁷⁸ See, for instance, Sahn and Alderman 1997; UN 1997; Garrett and Ruel, 1999.

⁷⁹ It is often argued that lumping children from 0 to 24 months into one category may hide some important differences between infants (0-11) and the remaining group. However, given the fact that we only have measurements for children 6-24, we opted for aggregation.

across the continent and may reflect parents' culturally-driven behavior, or, alternatively, physiological differences or activity levels leading to differences in caloric requirement along gender lines.⁸⁰

54. Children who are less than 24 months younger than their older siblings are more likely to be stunted, with a z-score that is 0.17 lower than those born further apart (see 'birth spacing' variable in Figure 4.21). When disaggregating the effect across different age groups, we find the effect is driven by older children: children over two who are born within 24 months of elder siblings have z scores that are 0.20 lower than those with a larger age gap.

55. Living in a female-headed household (where women are the legal and customary head of the household) is associated with better z-scores; this result is driven by the older children equation. Mothers being in charge of feeding decisions and practices have a positive impact on the nutritional status of older children.

56. Mother's education does not appear to be associated with significantly better z-scores. We impute this result to the degree of correlation between the mother's educational level and the per capita expenditure variable, a common problem in this type of regression analysis.⁸¹ The incidence of stunting decreases with the mother's (or guardian's) age up to fifty years, and increases thereafter. Households with larger numbers of under-five children are associated with lower stunting rates (by 0.09 z-scores). This result probably reflects the cumulative experience effect of mothers' childcare abilities.

57. Participation in a targeted nutrition program (for children under 5 years old) seems effective in reducing child malnutrition. A 10 percent increase in the share of households in the community participating in the program is associated with an improvement of 0.5 s.d. in z-score, implying that these programs are effective in reducing stunting.⁸² Access to improved sanitation also appears to be associated with improved malnutrition rates.

58. As expected, more rainfall (in the previous cropping season) appears to have a positive effect in reducing child malnutrition through its effect on increased agricultural production; higher annual rainfall by 100 mm increases the z-score by 0.4.

59. The size of the income effect is within the range of results reported in other studies (Sahn and Alderman, 1997; Alderman, et al., 2005; Garrett and Ruel, 2005). A 10 percent increase in income increases the z-score by 0.6 on average. This coefficient reflects an income elasticity of stunting of 0.034; that is a 10 percent increase in income increases the z-score by 0.34 percent. In

⁸⁰ See, for example, Kennedy and Cogill (1987), Shively and Chilowa (1989), Sahn (1990), Svedberg (1990) and Alderman and Higgins (1992)

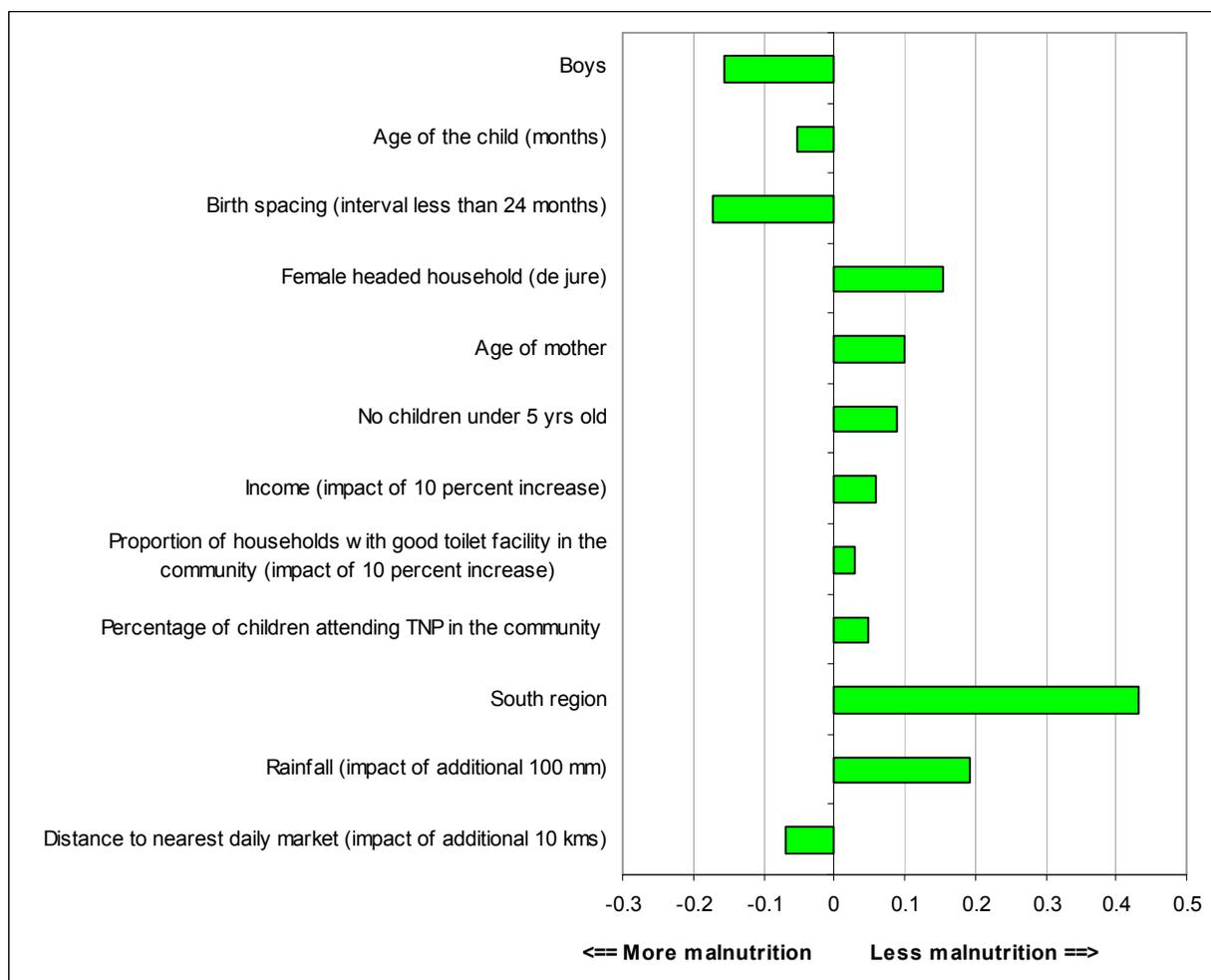
⁸¹ We tried modelling mother's education in a variety of different ways, none of which have produced a significant result. The drop in the statistical significance of this variable was consistent even after using the education level of other household members as an instrument.

⁸² The coefficient should be interpreted with caution, however, given non-random program placement. Alderman et al. (2005) argue that program placement variables are indeed endogenous with respect to the nutritional attainments of children, as they can be placed purposively in communities with higher rates of stunting. In the present analysis we do not allow for this consideration and simply notice that the other regressors used in the model remain robust in sign, size and statistical significance to the exclusion of this variable.

line with the findings of other studies, our results indicate that the effect of income in reducing malnutrition is higher for older children.

60. Finally, after accounting for differences in all the other variables, the model indicates a greater relative prevalence of stunted children in the North (relative to the South).

Figure 4.21: The determinants of child malnutrition (unit change effect on height-for-age Z-scores)



Notes: Selected results of 2SLS regression. The dependent variable is the z-scores on stunting (height for age). Only results statistically significant at 10% or lower are shown. Birth spacing is a dummy for children that are less than 24 months younger than their immediate older sibling. The effect of not being involved in any agricultural activity is significant but is not reported given the large size of the estimated parameter (2.71) relative to the other coefficients. Variables used to instrument are wealth index on durable assets derived with PCA, the highest education level in the HH other than the mother's, and the average level of per capita expenditure in the community. The definition of North region, Central region, and South region includes urban areas. The interpretation of the graph is complex: the units on the horizontal axis are standardized heights (with respect to age): each bar shows the effect of a unit change (or more units, as specified in the graph) of each regressor on the median height (per age) of the population expressed in standard deviations.

Model for household calorie availability

61. Next, we investigate the elasticity of calorie demand with respect to household resources in Malawi, using daily per capita calories as the dependent variable. As for our malnutrition model, we use a 2SLS procedure. The 2SLS estimation is needed to control for the potential correlation between per capita expenditure and the error term. This might be caused by two different sets of problems. Firstly, households' incomes, and hence expenditures, could be affected by caloric availability at the household level through reduced labor and income earnings associated with insufficient caloric intake. Secondly, both expenditures and caloric availability are constructed from the same underlying data on food consumption. Thus any random errors in measuring food expenditures are transmitted both to caloric availability and total expenditures, resulting in correlated measurement errors. The instruments for income employed in the 2SLS model are the wealth index in durable assets, and the proportion of land under tobacco cultivation.⁸³

62. Figure 4.22 reports summary results of the calorie demand model (see Annex 4D for a full reporting). Per capita calorie consumption declines with household size. The higher the proportion of children under 14, the lower the per capita calorie consumption. This result is consistent with the general finding that households with a higher dependency ratio often consume less calories, reflecting the effect of demographic composition on household's caloric requirements. The level of education in the household does appear to make a significant impact on per capita calorie consumption, even after controlling for income. That is, given two households of the same income level, the one with the greatest educational attainment of household head will have higher per capita calorie consumption, reiterating the importance of education on the calorie intake of the household.

63. A counterintuitive result was found for the prevalence of toilets and access to improved sources of water in the community: the data suggest both these regressors have a detrimental effect on calorie demand, a result which has no obvious interpretation. The regional variables were found not to be significant. Thus while the descriptive statistics suggested that households in the Center had higher average level of caloric availability, controlling for other characteristics, we cannot attribute these differences to living in the Center.

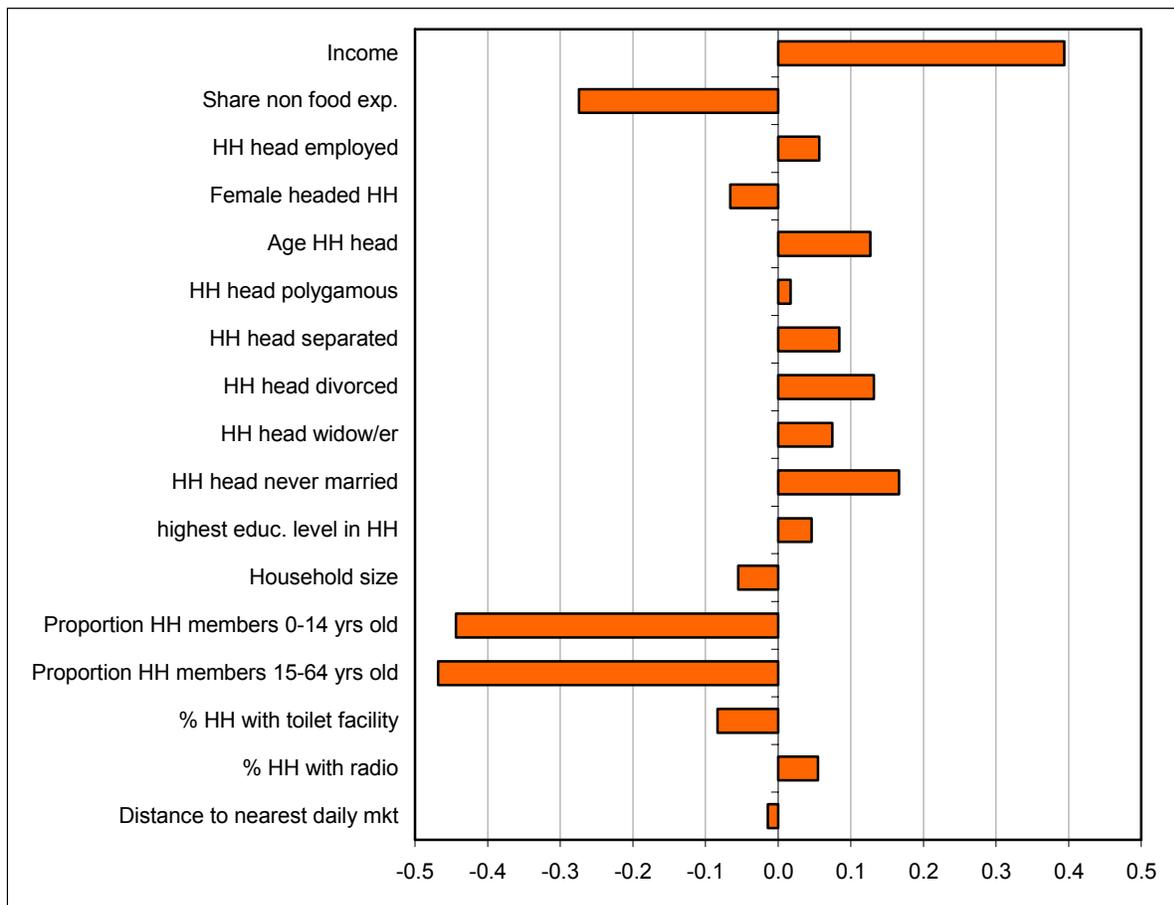
64. The elasticity of calorie intake with respect to expenditures is estimated at 0.4.⁸⁴ That is, a 10 percent increase in households' per capita expenditure increases the demand for calorie consumption by 4 percent. This is right in the middle of the range of estimates found for other developing countries. Disagreements over the size of this elasticity have provoked a big debate

⁸³ In order to assess the variable impact of income on calorie consumption we split the income variable into four segments to capture the changing relationship between per capita calories and expenditures along the income distribution, with an income spline function. We also ran a Lowess (locally weighted) regression of the log of calorie consumption on the log of per capita expenditure (full results are reported in Annex 4D). We found that substantial increases in household expenditure are associated with very minor changes in the elasticity of calorie demand, at least until the very upper range of the distribution of expenditures. We therefore decided to pool the expenditure variable across quartiles in the results reported here.

⁸⁴ The Hausman test (reported in Annex 4D) on the relationship between calorie intake and expenditures, confirms the existence of an endogeneity bias between the two variables, confirming the necessity of a 2SLS approach to estimating the elasticity of calorie demand.

in the economic literature over the effectiveness of increasing the income of the poor as a way to improve their nutritional status.⁸⁵ Given the widespread poverty in Malawi, and the overall low dietary diversity and heavy dependence on maize consumption across the income distribution, we would expect an overall elasticity on the high side. Increases in income may be spent on food attributes other than nutrients (such as quality, taste and variety), or on non food items altogether, therefore *not* necessarily resulting in substantial improvements in nutrient intakes. Thus, increasing the income of the poor is generally expected to improve their nutritional status, up to a certain point.

Figure 4.22: The determinants of calorie intake (percentage change effect)



Notes: Selected results of 2SLS regression. The dependent variable is the log of daily per capita calories consumption. Only results statistically significant at 10% or lower are shown. Omitted categories are: household head is monogamous, household head has no religious belief, proportion of household members older than 64, Urban, North. Variables used to instrument are wealth index on durable assets derived with PCA, and the proportion of land under tobacco cultivation. The definition of North region, Central region, and South region includes urban areas. The horizontal axis expresses the elasticity effect of each regressor on the dependent variable (taking into account due transformations for dummy and level variables). Each bar on this graph can be interpreted as the percent change in the dependent variable due to one unit percent increase in each regressor.

⁸⁵ See, for example, Berhman and Deolalikar (1987), and Subramanian and Deaton (1996).

AGRICULTURE AND FOOD SECURITY

65. Agriculture continues to be the single most important source of livelihood for the rural poor, and in view of the limited off-farm income-generating opportunities, it represents the key guarantor of food security for the vast majority of poor Malawians. Agriculture is treated in depth in Chapter Seven. The purpose of this section is to offer a picture of the main features relating food security to agricultural production, by focusing on the relationship between agriculture, calorie intake, and malnutrition.

Access to Land⁸⁶

66. Malawi is a country of smallholders and (near) landless. Almost 90 percent of Malawian households have access to agricultural land, with little regional differentiation. The poor are particularly tied to agriculture; over 95 percent of poor households have access to agricultural land. Food insecure households⁸⁷ are most dependent on agricultural sources of income. For this group of households, almost 75 percent of total income derives from agriculture, which is split into 47 percent from agricultural and livestock production and 27 percent from agricultural wage labour. Similarly, 68 percent of total income for poor households derives from agriculture. But agriculture is not only important for the poor or food insecure; 58 percent of both non poor and food secure households depend on agriculture.

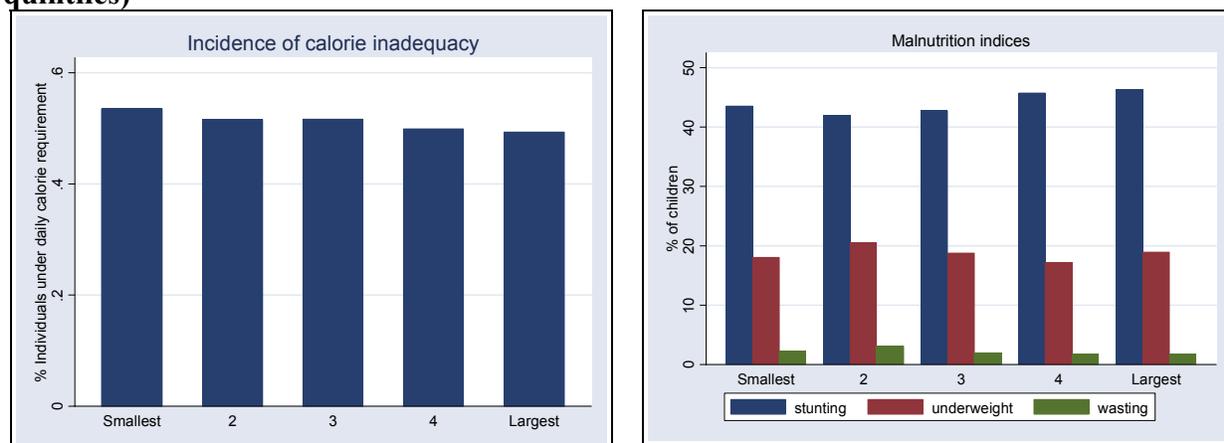
67. In the Malawi context, it has often been argued that the proximate causes of poverty among smallholders, and its manifestation in high levels of malnutrition among preschool-aged children emanate largely from the inadequate size of landholdings, which produce insufficient food and income to meet the nutritional needs of all individuals in the household. An earlier World Bank publication on the state of food security in Malawi (World Bank, 1990) defined the *core poor* as those households cultivating less than 0.5 ha of land. We find that there is some correlation between land size and welfare. However, overall average landholdings are quite small; even in the top quintile cultivated land approximately 1 ha per household. Further, when viewed by ranking households by land quintiles, the correlation between landholdings and wealth drops considerably, except at the upper end of the landholding distribution. Smaller landholdings are not synonymous with poverty.

68. Figure 4.23 explores the proposition that inadequate landholding size is one of the major constraints to sufficient food consumption and nutritional outcomes. It shows only a very weak relationship between landholdings and caloric inadequacy. Though calorie inadequacy decreases slightly as land holdings get bigger, even in the top land quintiles, about 50 percent of individuals have consumption levels below the recommended requirements. The child anthropometric measures in the second panel show an even bleaker scenario, with larger landholders in the top two quintiles exhibiting the highest levels of chronic malnutrition. Overall, based on these simple comparisons, landholding does not appear to be highly correlated with better nutrition.

⁸⁶ The figures and tables in this section exclude landless households.

⁸⁷ Food insecure households are defined as those for which the average per capita calorie intake is below 2,100Kcal

Figure 4.23: Incidence of calorie inadequacy and malnutrition by size of landholdings (by quintiles)



Source: National Statistical Office, IHS2

Land and staple crops

69. Given the importance of a single staple crop—maize—in the Malawian diet, the natural starting point in analyzing the link between agriculture and food security is to look at the extent to which subsistence production, in general, and maize production, in particular, are linked to land size and how this translate into adequate calorie consumption.

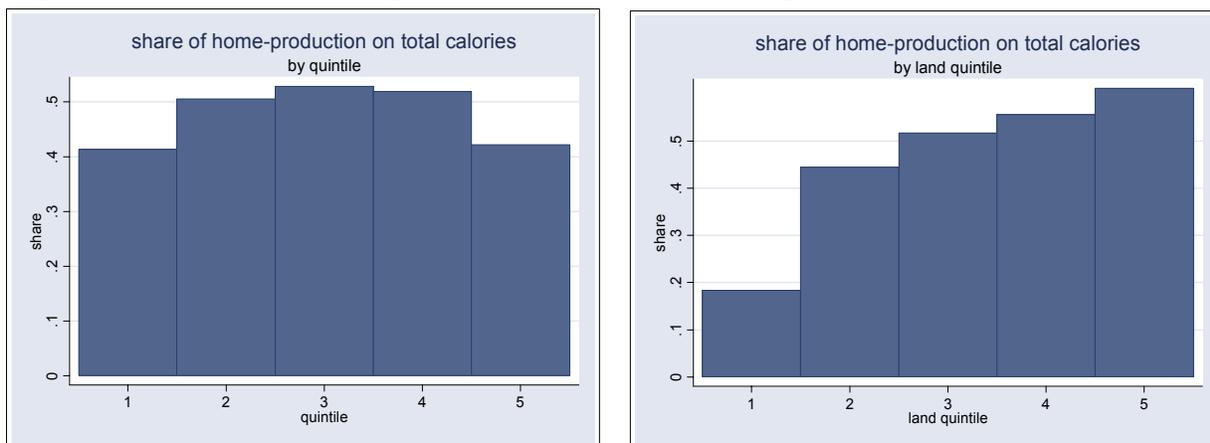
Table 4.5: Share of household caloric availability from home production, by region, location and poverty status.

	Non-poor				Poor				Total			
	Region				Region				Region			
	North	Centre	South	Total	North	Centre	South	Total	North	Centre	South	Total
Urban	0.18	0.17	0.08	0.13	0.22	0.19	0.10	0.15	0.19	0.17	0.09	0.14
Rural	0.54	0.60	0.50	0.56	0.53	0.55	0.45	0.49	0.53	0.58	0.47	0.52
Total	0.49	0.53	0.41	0.48	0.51	0.53	0.43	0.48	0.50	0.53	0.42	0.48

Source: National Statistical Office, IHS2

70. Due to a number of factors, including imperfect staple markets, prohibitive transportation costs and large price uncertainty, home production plays a crucial role in assuring adequate caloric availability for the majority of Malawians households. Almost one half (48 percent) of all calories consumed in Malawi are home produced, with the share of calories from home production similar among poor and non-poor households (Table 4.5). Naturally, subsistence production is far more important for rural than urban households (52 to 14 percent), and relatively less important in the South (42 percent), reflecting smaller landholdings. Figure 4.24 shows the share of calories from home production across expenditure quintiles in an inverted U-shape, with the highest levels among households in the middle quintiles across all three regions. Not surprisingly, however, the share of calories from home production increases with land size, reaching 61 percent among the top quintile nationwide and 67 percent in the top quintile in the Central region. Among the households in the bottom land quintile, only 18 percent of calories come from home production, due to the very small average per capita landholdings (0.11 hectares) in this land quintile.

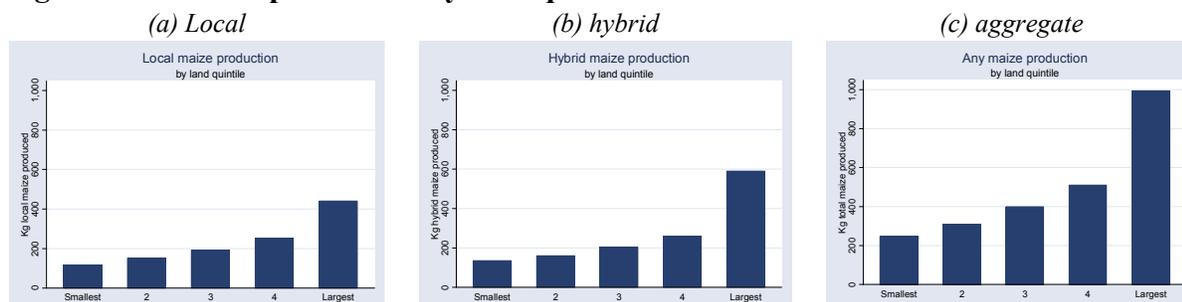
Figure 4.24: Share of home production in total calorie expenditure



Source: National Statistical Office, IHS2

71. In general, there is very little differentiation in cropping patterns of food crops by wealth status, and the most differences emerge when we look at cropping patterns by size of cultivated landholding: a greater share of households grows every type of crop (with the exception of pigeon peas), as land holdings increase. This is an indication of increasing diversity of crop choice as households have larger areas of land with which to produce.

Figure 4.25: Maize production by land quintile

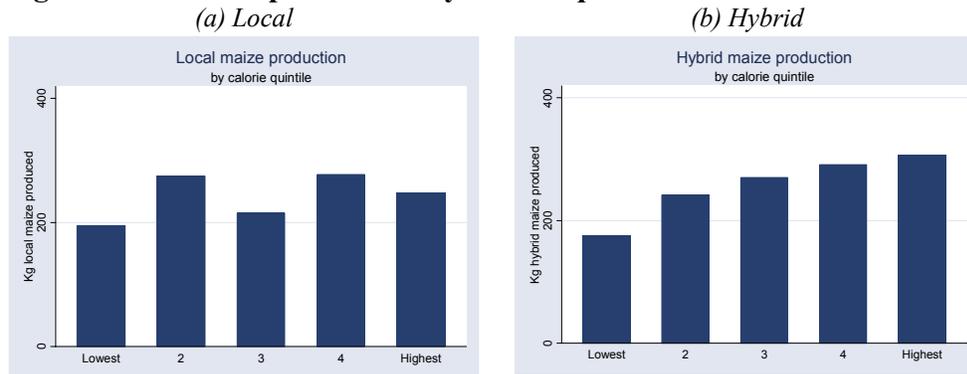


Source: National Statistical Office, IHS2

72. The relationship between maize production and calorie availability is illustrated in Figure 4.25.⁸⁸ There is a clear monotonic relation between size of landholdings and maize production, reiterating that maize production remains central in the crop portfolio of smallholders regardless of the size of their landholding. The amount of hybrid maize produced by larger landholders in the top quintile is nearly double the amount of local variety that they produced. This can be a sign of higher yields, and/or more extensive cultivation of hybrid in this group vis a vis traditional varieties. As shown in Figure 4.23 above, this group of larger landholders has a slightly higher caloric consumption as well as worse child malnutrition *vis a vis* individuals in the previous land quintiles. Figure 4.26 suggests that there is some association between maize production and higher caloric consumption, but it is confined to hybrid maize.

⁸⁸ Hereafter data on maize is presented for local maize (which includes composite maize), hybrid maize and in the aggregate figure (to include all maize varieties).

Figure 4.26: Maize production by calorie quintile

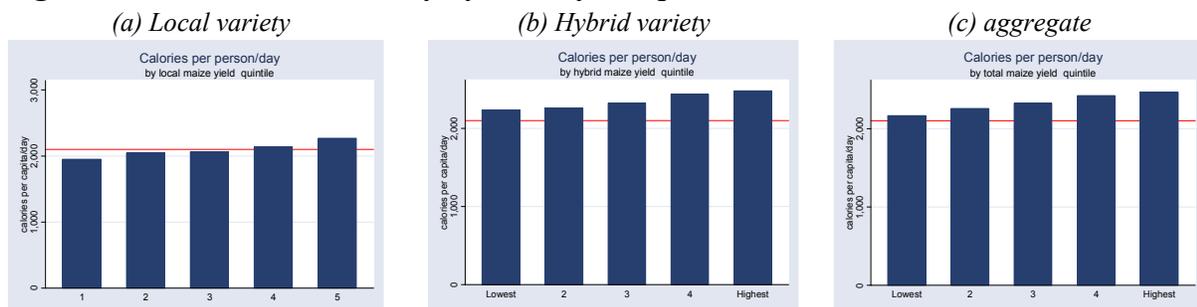


Source: National Statistical Office, IHS2

Maize yields

73. In Figure 4.27 below, we explore the relationship between maize yields and caloric consumption. Higher maize yields appear to be associated with higher caloric consumption. Similar patterns are found for both traditional and hybrid maize. The differences between the most and the least productive maize farmers are in the order of 10-15 percent in total caloric availability.

Figure 4.27: Calorie availability by maize yield quintiles



Source: National Statistical Office, IHS2

What role for other staple crops?

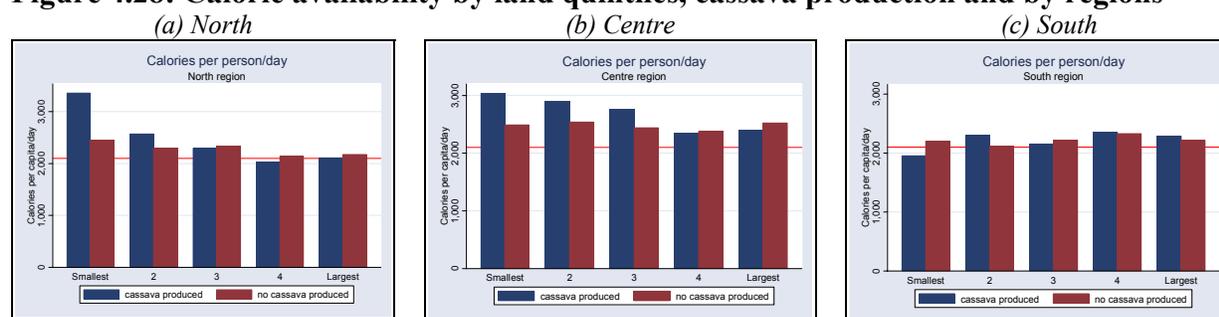
74. The supply of cassava and cassava products has represented an important source of food intake in countries such as Ghana and Nigeria, where an aggressive cassava research and cassava market promotion program promoted by the International Institute of Tropical Agriculture (IITA) enabled farmers to increase the supply and consumption of the crop, in turn leading to a dramatic drop in the levels of undernourishment observed in both countries (SOFI, 2000).

75. Over the past several years, following an impulse from government policies, the diffusion of cassava in Malawi has also been quite strong, particularly in the Northern region. Based on estimates from the 1998 IHS1, only about 7 percent of Malawian households were producing cassava, peaking at 10 percent in the North. By the year 2005, however, more than 20 percent of all agricultural households were producing cassava, reaching 45 percent in the North and 24

percent in the South. In the Central region, the prevalence of cassava cultivation remains quite low, at 11 percent.

76. On average, cassava production is not correlated with higher levels of calorie intake across different land quintiles. However, when the data are broken down by region (Figure 4.28) it becomes evident that for the smaller land holders in the Northern and Central regions (i.e., up to the third land quintile) cassava production is, indeed, associated with higher levels of nutritional intake. As seen in previous section, particularly in the North, cassava may be used as a consumption smoothing mechanism during periods of maize shortages, thus fostering higher consumption levels.

Figure 4.28: Calorie availability by land quintiles, cassava production and by regions



Source: National Statistical Office, IHS2

Tobacco and food security

77. The Government of Malawi places the utmost importance to the promotion of cash crops, both for promoting growth, and to alleviate poverty and food insecurity. This intent has translated into a number of policy reforms, notably the repeal of the 1972 Special Crop Act in the mid-1990s. This Act had prevented smallholders from growing lucrative export crops such as burley tobacco. The ways in which adopting tobacco cultivation affects food security and nutritional status in tobacco-growing households, however, has been a source of controversy in the academic community.⁸⁹

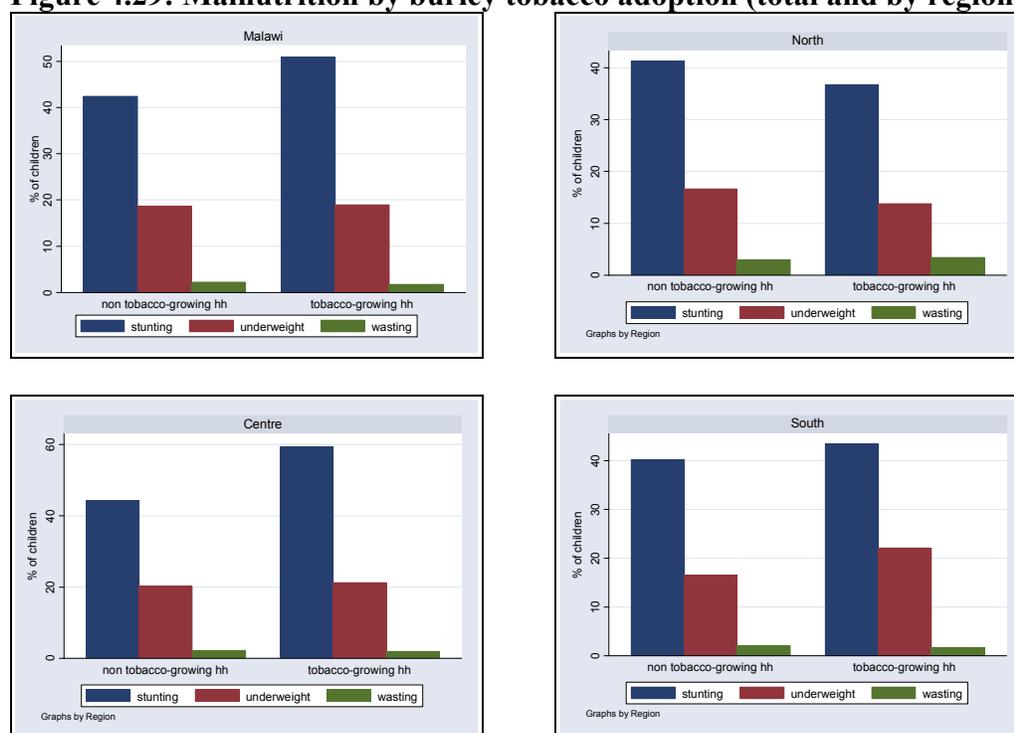
78. The IHS2 data show that 15 percent of households are growing tobacco nationwide. This figure masks significant regional differences, as tobacco is mostly produced in the Center and North of the country, with prevalence of 25 and 21 percent, respectively, compared to only 6 percent in the Southern region. Larger landholders are significantly more likely to produce tobacco than smaller farmers: nationally, one third of households in the top land quintiles reported growing tobacco compared to only 2 and 5 percent in the bottom two quintiles, respectively. Better-off households are also more likely to grow tobacco compared with poorer households: households in the top expenditure quintile have almost double the probability of growing tobacco than households in the bottom quintile (19 versus 11 percent). Although no inference on causality should be made, land and capital constraints may be impairing the

⁸⁹ See, for example, Von Braun, J., E. T. Kennedy, et al. (1994), Maxwell and Fernando (1989), and von Braun et al. (1989).

adoption of high-return cash crops by less endowed smallholders. We investigate this issue in more detail in Chapter Seven.

79. Average calorie consumption for tobacco growers is virtually identical to that of non-growers, with no significant differences between the two groups of farmers across regions (not shown). In contrast, children in households of tobacco growers exhibit higher malnutrition rates than children in households not growing the cash crop (Figure 4.29). Disaggregating the data by region reveals that the troublesome pattern is driven by the high levels of malnutrition among tobacco growers in the Central region, with rates of stunting at around 60 percent (compared to just over 40 percent among non-adopters). The finding warrants further investigation, and may ultimately help shed light on the “Center paradox”, of average higher caloric availability and lower levels of poverty, concurrent with higher levels of child malnutrition. It is also worth noting the reverse pattern among tobacco growers in the Northern region.

Figure 4.29: Malnutrition by burley tobacco adoption (total and by region)

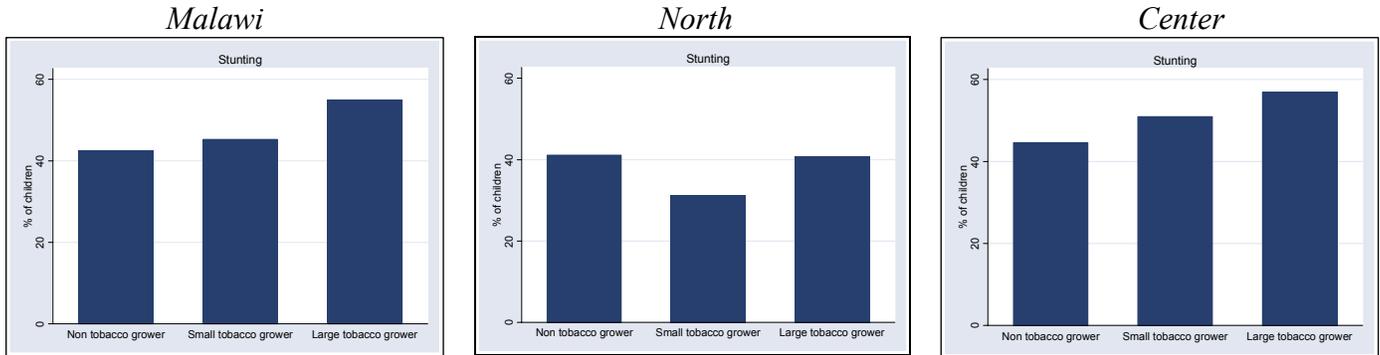


Source: National Statistical Office, IHS2

80. In order to identify some factors driving the result of higher malnutrition among children of adopters, we differentiate tobacco growers based on the extent of cultivation of the cash crop. As a consequence of active promotion of cash crops by the government and by donors, all but the smallest and poorest smallholders end up adopting the new crops. Somewhat counter-intuitively, however, Figure 4.30 shows that children of larger tobacco growers are actually more malnourished than children of both smaller adopters and non-adopters. This is true at the national

level, as well as by regions.⁹⁰ However, small tobacco growers in the North have the lowest rates of stunting, at slightly above 30 percent.

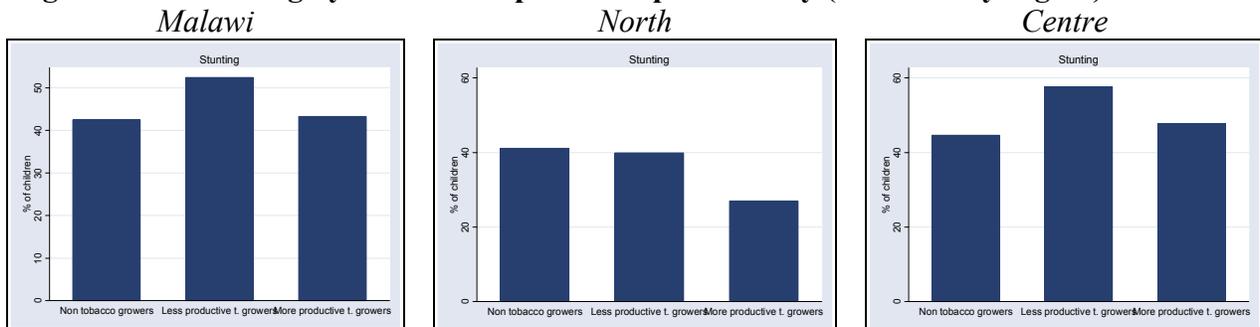
Figure 4.30: Stunting by extent of tobacco adoption



Note: Small growers are defined as those with less than the median value (0.40 ha) of land cultivated to tobacco.
Source: National Statistical Office, IHS2

81. Next we explore whether differences in nutritional performance may be determined by the different levels of profitability of various types of adopters. As expected, Figure 4.31 shows that higher malnutrition is concentrated amongst low-return tobacco adopters. The difference is likely to reflect both differences in input availability and use, as well as heterogeneity in human capital endowments between the two groups of tobacco growers. The trend is also similar across the two major tobacco-growing regions.

Figure 4.31: Stunting by tobacco adoption and profitability (total and by region)



Note: Tobacco growers are defined as less productive when they have less than the median value (44,973MWK/US\$ 342.49) of revenue from sales per unit of land cultivated to tobacco.
Source: National Statistical Office, IHS2

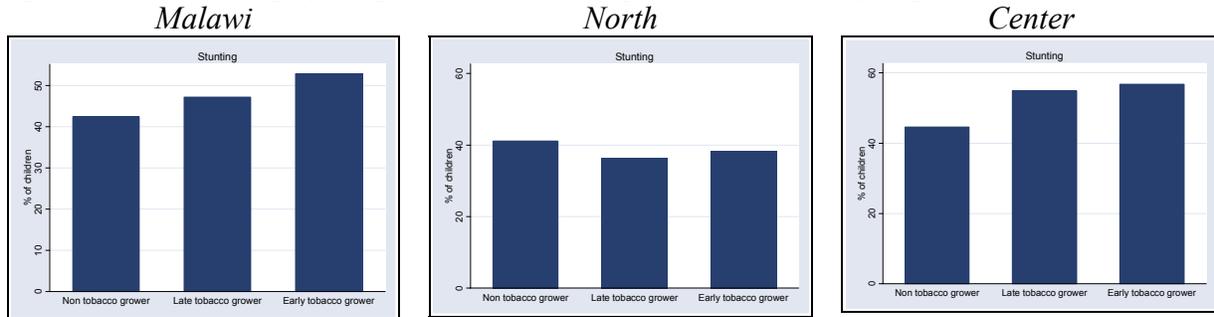
82. Tobacco farmers can also be differentiated based on the number of years of repeated cultivation of the cash crop. As expected, long-term adopters appear to be more profitable, on average⁹¹. Repeated adopters are more likely to be successful due to, among other things, the possible learning comes with the adoption of more complex types of production. Repeated adoption, *per se*, can also implicitly be an indication of success.

⁹⁰ Because of the low number of growers in the South, the figures for this region are not reported

⁹¹ The IHS2 collected tobacco adoption histories only since the agricultural season 1999-2000.

83. However, despite higher profitability among older adopters (not shown), longer adoption does not appear to translate into better nutritional status for the children of adopters (Figure 4.32). Older adopters are actually worst off in terms of nutritional outcomes. Once again, some regional differences emerge from the data.

Figure 4.32: Stunting by length of tobacco adoption (total and by region)



Note: Early tobacco growers are defined as those that have cultivated tobacco before 2000.

Source: National Statistical Office, IHS2

84. When tobacco adopters are compared to non-tobacco growers in terms of dietary food groups by expenditure quintile, the most significant differences are a slightly lower level of cereal consumption, and higher consumption of pulses among tobacco growers (not shown). However, even this apparently positive shift in the diet does not translate into lower malnutrition. A follow-up study is planned to further investigate the differences between adopters and non-adopters.

CHAPTER 5: THE IMPACT OF CHRONIC ILLNESS AND HIV/AIDS ON HOUSEHOLDS IN MALAWI

INTRODUCTION

1. With an estimated prevalence rate among prime age adults of 11.8 percent, Malawi ranks eighth in the world in terms of the severity of its HIV/AIDS epidemic (NSO and ORC Macro 2005).⁹² The disease has a potentially devastating impact on the lives of AIDS patients, and on surviving family members. Even in the best-case scenarios of decreasing incidence of infection, the lag between HIV infection and development of AIDS means that the disease will continue to impact Malawians well into the future.

2. This chapter examines an array of demographic and economic implications of chronic illness and HIV/AIDS on households. Because of the stigma associated with being HIV positive, there is very limited accurate data on cause of illness/mortality, such that the impact of HIV/AIDS on the living population cannot be distinguished with certainty from the impact of other chronic and fatal illnesses. Hence, following accepted practice, we focus on those deaths most likely to have been caused by AIDS by narrowing our analysis on the death of individuals in prime age (aged 15-49). The chapter begins by briefly describing the extent of HIV/AIDS in Malawi. Next, it investigates the demographic impacts of the epidemic, before exploring the impact of the disease at the household level. The effects of HIV/AIDS at the macro level, both in terms economic growth and on the provision of public services are then explored.

THE HIV/AIDS EPIDEMIC IN MALAWI

3. A key challenge in combating the HIV/AIDS epidemic is the difficulty in obtaining accurate data. In part, this stems from stigma associated with being HIV positive, which makes it difficult to establish the true extent of the disease in the living population. As is typical for African countries, HIV prevalence in Malawi until very recently has been estimated based on antenatal clinic (ANC) surveillance data. These data are extrapolated to create national estimates, although they are often critiqued for not being drawn from a random sample of the population, since women who attend antenatal clinics are a select population. Addressing this concern, in 2004 the MDHS tested an adult population sample. However, the non-compliance rate for testing was 30 percent introducing potential bias in these population-based statistics.

4. In addition, Malawi lacks reliable mortality statistics with which to monitor demographic trends and implement appropriate policy measures. Registration systems for recording deaths are weak and under-developed (see Setel *et al.* 2005). Even disregarding deaths which occur between censuses, for about one-third of all the deaths reported by households in the IHS2, the cause of death was not diagnosed by a medical practitioner. Reporting difficulties are further compounded because, even when everybody may know that a person died of AIDS, few ever mention this in public, and AIDS is rarely cited as cause of death even at a formal hospital. In

⁹² Figures are for prime age adults (aged 15-49 years). Malawi is ranked after Swaziland (39 percent), Botswana (37 percent), Lesotho (29 percent), Zimbabwe (25 percent), South Africa (22 percent), Namibia (21 percent) and Zambia (17 percent). Data are from the Population Reference Bureau (PRB), 2004 and 2005.

spite of these challenges, the IHS2 and other surveys, as well as clinical data provide us with a basis to estimate the impact of the HIV/AIDS epidemic on Malawian society.

HIV/AIDS prevalence in Malawi

5. The first case of HIV/AIDS in Malawi was reported in 1985, when the prevalence rate among women attending ANCs in major urban areas of Malawi (Blantyre, Lilongwe and Mzuzu) was 2 percent. The disease has rapidly spread in the past two decades (based on ANC data). In 1987, 8 percent of the women attending ANC in these major cities tested positive (MEASURE Evaluation 2004), and HIV prevalence rose sharply to 30 percent in 1993. It declined slightly to 26 percent in 1998, 20 percent in 2001 and remained at 21 percent in 2003 (UNAIDS/WHO 2004).

6. The most recent population-based estimates show that HIV/AIDS rates are not uniformly distributed across locations. Urban prevalence rates remain significantly higher than rural rates. By 2004, the estimated prevalence rate was 17 percent in urban areas and 11 percent in rural areas (MDHS 2004). In absolute numbers these percentages correspond to 110 thousand adults age 15-49 that are HIV positive and reside in urban areas, and 554 thousand adults age 15-49 that are HIV positive in rural areas. Hence, in absolute terms a much large number of infected people reside in rural areas.⁹³ There is also considerable variation in rates across districts: in 2004, prevalence rates ranged from 6 percent in Kasungu to 25 percent in Zomba.

7. HIV/AIDS rates vary by risk status of individuals, with very high prevalence rates reported among populations at highest risk. In 1986, 56 percent of sex workers in Blantyre were HIV-positive and, in 1994, 70 percent of prostitutes attending the AIDS counseling center in Lilongwe tested HIV- positive (UNAIDS/WHO 2004). In one site in Central region and two sites in Southern region surveyed together, an even higher prevalence rate of 86 percent was reported (US Census Bureau 2002). These high rates are probably in part due to selection, since prostitutes who suspect themselves of being HIV positive may be more likely to seek AIDS counseling. High prevalence rates ranging from 37 percent to 55 percent were also found among sexually transmitted disease (STD) patients in seven districts of Malawi with the highest rate of 70 percent among STD patients in Blantyre (US Census Bureau 2002).

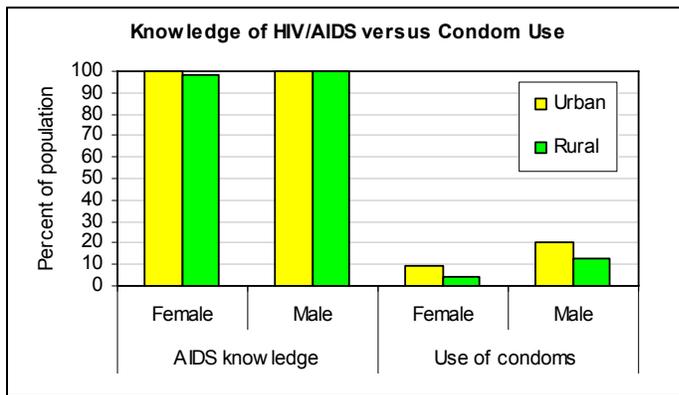
Knowledge of HIV/AIDS, safe sex practices and HIV testing

8. The level of general knowledge about HIV/AIDS is high among Malawians. Almost 100 percent of those sampled reported that they had heard about AIDS in the 2004 Malawi Demographic and Health Survey (MDHS). However, specific and accurate knowledge of preventing the sexual transmission of HIV/AIDS is quite low. Only 41 percent of the young men and 34 percent of the young women (aged 15-24) were able to correctly identify two ways of preventing transmission, and to also reject three misconceptions about HIV transmission (UNAIDS/WHO 2004). Higher levels of education are associated with more knowledge, as is wealth and urban residence (NSO and ORC Macro 2005).

⁹³ This has significant logistical and costing implications for the provision of Voluntary Counseling and Testing (VCT) and of anti-retroviral therapy (ART).

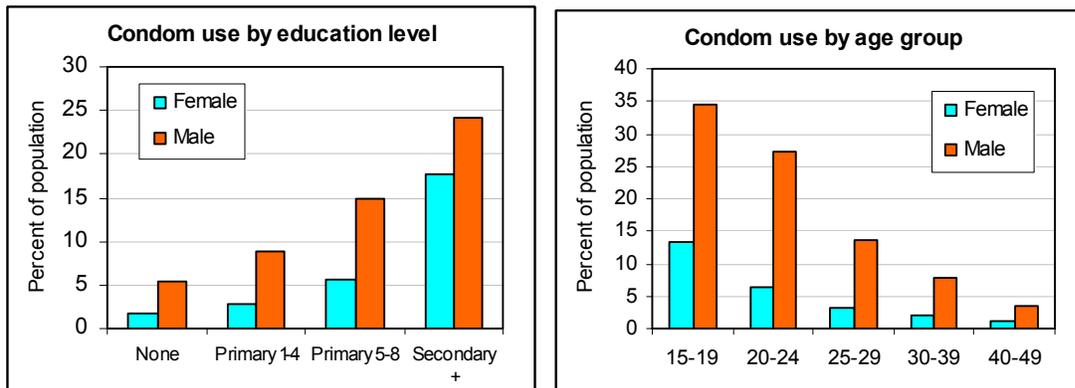
9. Despite relatively high levels of HIV/AIDS knowledge, only 15.1 percent of men and only 5.2 percent of women used a condom the last time they had intercourse (NSO and ORC Macro 2005). Figure 5.1 shows this dramatic discrepancy. Safe sexual practices related to HIV/AIDS knowledge are also not uniformly distributed across demographic and geographic categories. As seen in Figure 5.2, higher levels of condom usage were observed among young people (especially young men), and highly educated people (secondary or more). Similarly, never married people and urban people were more likely to use condoms (not shown). There were low levels of condom use even in risky situations. For example only 42.5 percent of men who paid for sex in the past year indicated that they used a condom in the last paid intercourse.

Figure 5.1: General knowledge of HIV/AIDS versus condom use by location



Notes: Figures for condom use reflect the respondent's usage during last episode of sexual intercourse.
Source: NSO and ORC Macro (2001)

Figure 5.2: Condom use by education level and by age group



Notes: Figures for condom use reflect the respondent's usage during last sexual intercourse.
Source: NSO and ORC Macro (2001)

10. Moreover, in the absence of actual testing, peoples' subjective evaluations of their HIV status are different from reality, i.e. some overestimate and others underestimate their risk of infection. Of the men who were infected, 71 percent stated that they had zero or low likelihood of being infected. Among the infected women, 45 percent stated that they had zero or low likelihood of being infected. On the other hand most of those who indicated that they had a high

chance of being infected were actually not infected (91 percent of the men and 87 percent of the women).

11. Low condom use in Malawi, can partly be explained by the fact that they are associated with promiscuous behavior, and anecdotal evidence suggests that Malawians are generally unwilling to be seen buying condoms. Condom use was mentioned as a means of AIDS prevention by 57 percent of women and 76 percent of men (NSO and ORC Macro 2005), after abstinence (mentioned by 71 percent of the women and 90 percent of the men). However, HIV-positive individuals that had sexual partners and learned their HIV-status were more likely to purchase condoms, indicating a willingness to protect partners from HIV infection. This was not the case among HIV-negative individuals that had learned their status, however.

12. Poor condom accessibility and affordability could also be a factor prohibiting appropriate preventative behaviors. However, a randomized study by Thornton (2006) shows that even after extensive pre-and post-test counseling and heavily subsidizing condoms, Malawians are still not willing to adopt condom use as a means of HIV prevention. The study re-interviewed respondents that had undergone Voluntary Testing and Counselling (VCT) two months earlier. Respondents were given 30 cents (equivalent to MK 30) as a token of appreciation for their participation, and offered the opportunity to use this money to purchase of condoms at half the (already subsidized) price at MK 5 for a package of 3 condoms, and MK 3 for a single condom. Only 24 percent purchased any condoms with the money, and only 3 (out of 1,553) purchased the maximum number of condoms. Moreover, in the interval between being tested and the experiment, only 8 percent reported purchasing condoms, although 67 percent reported having had sex.

13. This low level of condom usage may also be partly explained by the fact that very few people have ever tested for HIV, in spite of expressing both willingness and knowledge about where to get tested. Latest figures also show that 15 percent of women and 17 percent of men reported ever being tested in the 2004 MDHS (NSO and ORC Macro 2005). Poor access to testing sites due to physical distance, and stigma associated with visiting such sites may be contributing to the low HIV testing levels observed. Most respondents in a study by Yoder and Matinga (2004) demonstrated that they preferred free testing and rapid (same day) results. Rapid results also reduce travel and psychological costs associated with accessing the VCT centers by half.

14. Yoder and Matinga also found that although most people are willing to be tested, when probed further, they are not thinking of getting tested in the near future. Their reasons included: not considering themselves at risk, not wanting to be seen going to a VCT facility and thereby being suspected of having HIV/AIDS, and being afraid of a positive HIV result. Some even chose to go to far way facilities to avoid being recognized. For those who did get tested, they came because they suspected themselves to be infected, and because they were feeling ill. Though the majority of the respondents in the MDHS 2001 (91 percent of the men and 94 percent of the women) agreed to the idea of pre-marital HIV testing, in practice very few came because they wanted to plan for their life (ORC Macro and NSO 2001).

15. In the IHS2, community survey responses linked to household data show that about 41 percent of rural people and 60 percent of urban people lived within 2.5 kms (30 minutes' walk) of a health clinic (however, not all of these clinics offer VCT). There is evidence that the majority of adults in the general population are willing to get tested if there are low or no costs (in terms of direct cost and transport or time to services). In the 2001 MDHS, 73 percent of the women and 72 percent of the men indicated that they wanted to be tested (NSO and ORC Macro 2001). Substantiating this, a study in three rural sites in Malawi showed relatively high HIV test acceptance rates when voluntary testing was included as part of the survey: 72 percent were tested in Rumphi and 74 percent in Mchinji and Balaka. Refusal rates ranged from 6 percent in Rumphi to 8 percent in Balaka and Mchinji. The rest were not tested due to movement away from the household or other factors (Obare 2006), and of this group, 91 percent accepted the HIV test after being successfully contacted. The HIV tests were conducted within the household, as opposed to requiring individuals to go to a clinic, thereby reducing the cost of time and transport.

16. Distance is also a hindrance for learning the results of VCT. The randomized experiment by Thornton (2006) discussed above also provided monetary incentives for people that had agreed to test for HIV or STIs. The study showed that providing a small monetary incentive (less than one-tenth of a day's wage) increased the share of people wanting to learn their results by 50 percent. The study also suggested that stigma associated with accessing VCT can be partly offset by the small monetary incentives, as people will give the excuse of wanting to get the incentive rather than the HIV result. VCT services were provided within the communities of the study, with an average distance to the test site of 2.0 kilometers, and 95 percent of those tested living within 5 kilometers. Nevertheless, only 72 percent of those that tested for HIV attended follow-up VCT to receive their HIV results, and only 39 of those that did not get any monetary incentive attended the VCT for their results.

17. HIV/AIDS has specific gender dimensions. HIV prevalence is higher among women (13 percent) than men (10 percent). The gender differential is starker for young adults: prevalence was more than *four* times as high for females as males aged 15-24 in 2004. One-third more females than males in the group aged 20-29 were infected while for age groups aged 30 or more, more males than females were reported to have AIDS (NAC 2003). This is probably in part due to the age difference between sexual partners. In the IHS2, among couples, men were on average over 6 years older than their partner. As a consequence to traditional patterns of partnering, women start to engage in sex at a much earlier age than men (MEASURE Evaluation 2004).

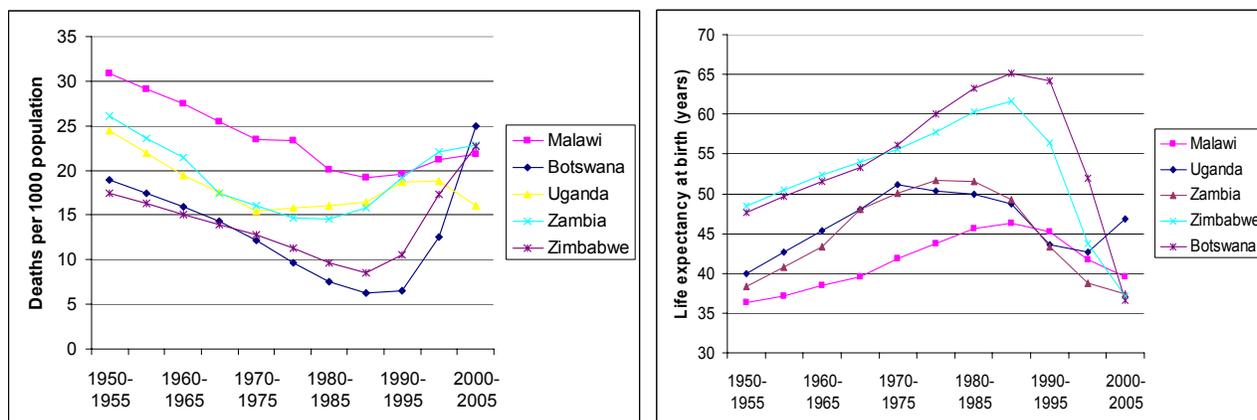
18. This large age gap, consistent with many African countries may create gender power relations that disadvantage females in their negotiation for safe sex, reflected in lower female condom usage. In addition, 8 percent of married Malawian men reported having extra-marital partners but only 47 percent used a condom in last sexual intercourse. An even smaller number of married women used condoms (24 percent) in their extra marital relations, although very few of the married women (0.8 percent) reported extra marital sexual partners. This puts married women at a high risk of infection, especially considering that only 42 percent of married men that reported paying for sex in the last 12 months actually used a condom in the last paid sexual intercourse (NSO and ORC Macro 2005). Desperation from poverty exacerbates this situation for poor women as they may opt to engage in transactional sex to provide for their families, discussed more below.

DEMOGRAPHIC IMPACTS OF HIV/AIDS IN MALAWI

19. HIV/AIDS is estimated to be the leading cause of death among those aged 20-49, with three quarters of all deaths in this age group attributed to AIDS (NAC 2003). The crude death rate (CDR) in Malawi was 22.3 deaths per 1,000 head of population in 2000, but would have been almost half this rate (12.0) in the absence of HIV/AIDS (US Census Bureau 2002). Trends in Malawi are mirrored in an even more pronounced way in other Sub-Saharan countries that have higher HIV/AIDS rates. Since the onset of the epidemic, CDRs have increased in all the countries shown in Figure 5.3, and have just recently started to decline for Uganda which is renowned for significantly lowering HIV/AIDS prevalence.

20. Malawi is also losing sizeable gains in life expectancy that accrued from improved health programs in the 1950's to 1970's. The impact of HIV/AIDS on life expectancy, depicted in the second panel of Figure 5.3, shows that life expectancy in Malawi has dropped to 37 years as a result of AIDS (CDC 2004). An extrapolation of the data suggests it would have been over 55 years by now without AIDS. Once again, the impact of HIV/AIDS on life expectancy is even more apparent when we compare Malawi to more-highly affected Sub-Saharan African countries. Botswana, Zambia and Zimbabwe had higher life expectancy rates relative to Malawi in past decades, but are now doing worse due to their much higher prevalence rates of HIV/AIDS.

Figure 5.3: Life expectancy at birth and crude death rates over time for Malawi and selected sub-Saharan African countries



Source: UN (2004)

21. Since the majority of AIDS cases are found among the productive ages, increased AIDS mortality can have profound effects on the structure of the population, with implications for socio-economic outcomes for survivors. The dependency ratio, defined as the ratio of children and elderly to the economically productive increases with increases in mortality and morbidity from AIDS. If fertility rates decline due to HIV/AIDS, the dependency ratio may eventually stabilize, despite increasing mortality among prime-age adults, though as yet there is scant evidence for this. In the short-run, without fertility changes, the impact of increased dependency ratios increases the vulnerability of households.

22. Although infant mortality rates have declined in Malawi, levels remain extremely high with almost one in ten infants dying before their first birthday. The US Census Bureau (2002) estimated that infant mortality was 122 deaths per 1,000 live births in 2000, but extrapolated that without AIDS, it would be 105. In Malawi, about 30 percent of all HIV-positive mothers are expected to transmit the virus to their children, implying that that infant and child mortality rates are expected to increase. A study in urban Malawi found mortality rates of children of HIV-positive mothers to be three times (36 percent) higher than that of HIV-negative mothers (12 percent) (Taha *et al.* 1995). Children of HIV-positive mothers also had higher prematurity, higher intra-uterine growth retardation and higher incidence of low birth-weight (Taha *et al.* 1995).

THE IMPACT OF HIV/AIDS AT THE HOUSEHOLD LEVEL

23. Despite the difficulties of using cross-section household data to evaluate the impact of adult death (Box 5.1), it can be informative nevertheless to examine households to see what differences characterize those with and without recent deaths. Table 5.1 summarizes incidence of deaths in the past two years by age of deceased. Almost half of the deaths in the household were among young children aged below 5. Most of these occurred among infants (under 1 year), reflecting high infant mortality rates, indicative of poor reproductive health system and high levels of poor nutrition and poverty. Adult prime-age deaths (death of an adult who was 15-49 years old at time of death) were the next most prevalent, experienced in 29 percent of all households that experienced a death. This pattern of death reflects the impact of HIV/AIDS on mortality as the majority of sexually active people are in the 15-49 year age range. Among the young children, mother to child infection is also estimated to occur in 1 out of every 3 births, in the absence of any intervention (Schwartlander *et al.* 1999), thereby contributing to some of the child deaths experienced. Cause of death was self-reported by households, with the caveat that most of the conditions that caused death were not diagnosed by a medical practitioner. Of these deaths, 96 percent were due to illnesses, 3 percent due to injury and 1 percent due to child birth complications.

Table 5.1: Incidence of deaths in past two years, by age of deceased

<i>Household that experienced:</i>	Percent	Percent of total deaths
Young children death (0-4 yrs)	6.7	48.9
Older children death (5-14 yrs)	1.1	7.2
Prime-age deaths (15-49 yrs)	4.1	28.9
Older adults deaths (50+ yrs)	2.2	15.0
Any death	13.5	100.0
No deaths	86.5	n.a.

Source: National Statistical Office, IHS2.

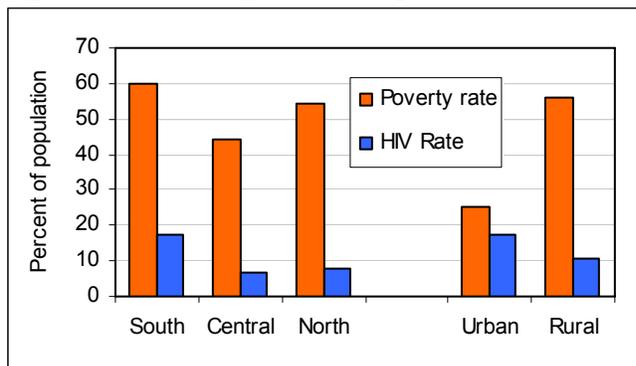
HIV/AIDS and Poverty

24. The causal relationship between HIV/AIDS, economic performance and poverty is ambiguous, in that poverty can be a cause, as well as a consequence, of HIV/AIDS. This

compounds the difficulties in obtaining empirical evidence of the extent of the disease and its effects on welfare. In Malawi, the evidence on the link between HIV and wealth is mixed. There are higher HIV rates among urban populations, although urban poverty is half the poverty rate of rural populations. Latest statistics show the Central region having the lowest poverty incidence as well as lowest HIV prevalence (see Figure 5.4). Ivaschenko and Montana (2005) also showed statistically significant positive correlations between predicted district HIV prevalence rates and poverty rates for the south and central regions of Malawi. Particularly, their regressions showed that an increase in the share of people living below the poverty line in the district is associated with a 1 percent and 8 percent higher probability of being HIV-positive in the Central and South regions, respectively.

25. Among high-risk groups, poverty is more likely to be a driving factor for the spread of HIV. A qualitative study of the relationship between food insecurity and HIV/AIDS showed that women in villages near Lilongwe city were ‘forced’ into exchanging food for sexual relations due to the pressure of hunger, lack of employment opportunities, and poverty in general (Bryceson and Fonseca 2005). Another element of poverty is migratory labor, which is also associated with higher risk for HIV infection. Obare (2006) showed that respondents of MDICP3 survey whose partners usually stayed outside the village were significantly more likely to be HIV positive than those whose partners usually resided in the village.⁹⁴

Figure 5.4: Poverty and HIV prevalence rates in Malawi



Source: National Statistical Office, IHS2 and MDHS 2004

Other differences in household characteristics

26. While we do not find any evidence of a correlation between poverty and deaths, this may be masking important differentials across other non-income outcomes (such as schooling of children, as well as gender impacts).

27. Table 5.2 summarizes the characteristics of households that experienced a prime-age death (PA) (with age ranges of 15-49) in the past two years. As deaths of household heads may be especially salient, the event of death of household head or spouse of head death in past two

⁹⁴ The Malawi Diffusion and Ideation Change (MDICP) project is a longitudinal study in rural Malawi that is part of the Social Networks Project based at the Population Studies Center of the University of Pennsylvania (see <http://malawi.pop.upenn.edu> for details).

Box 5.1: ECONOMETRIC PROBLEMS ASSOCIATED WITH MEASURING HIV/AIDS IMPACTS

A comprehensive understanding of the impact of AIDS on households requires more complex data than traditional cross-sectional household surveys can provide, including multiple interviews with individuals over time and more detailed questions related to morbidity and mortality than are normally included in household surveys.

In the absence of this kind of data, and because of the problems associated with collecting any data on the prevalence of HIV/AIDS discussed at the beginning of this chapter, death of a household member is used in the analysis in this section as a proxy to measure the impact of HIV/AIDS on households. However, there are a number of difficulties with this approach.

Perhaps the most cited concern is that in order to evaluate the impact of an event like an adult death, we would ideally know something about the socio-economic situation of the household prior to the death. By examining the event of a death in a cross-section of households, rather than looking at time series data tracking the same individuals over time, we lack information on the situation before illness and death occurred, and our data will not pick up any behavioral patterns or socio-economic conditions that make HIV/AIDS a non-random occurrence. In other words, if prime-age mortality is correlated with individual and household characteristics (such as social status, wealth and mobility) prior to the onset of illness, then our failure to control for these characteristics may generate biased estimates of the impact of adult mortality. We might find no difference, *ex post*, between those households with and without a death, but this could mask important and significant impacts. For example, study of rural households in Malawi found that marginally poor households affected by HIV/AIDS become poorer (Masanjala 2005). That is, after experiencing a death or serious illness shock, the households mainly dis-saved or borrowed to cope with the shock. Using a dynamic Partial Adjustment Equilibrium model, the study found that these households had half their *ex ante* equilibrium per capita income, 18 months after occurrence of the shock.

Compounding the problem, the cause of death is almost always unidentified. Instead, the researcher uses the age of death (for example by restricting to the data to those aged 15-49), to narrow down the events to those most likely to have economic impact and be caused by AIDS.

In addition, using a household member's death to measure the impact of HIV/AIDS does not account for the fact that non-affected households are often indirectly affected by deaths in households surrounding them, due to the complex web of kinship ties through extended family relations that characterize Malawian society. For example in IHS2, most households reported that the deaths of household members they experienced in past 5 years also affected other households in the community. Of the households that faced the death of a head or working member, 56 percent indicated that the death also affected other households.

Another concern is that the death itself could precipitate household dissolution. For example, if the main breadwinner dies, the surviving spouse might re-locate, children might become fostered, etc. These consequences would not be captured with this measure, resulting in a bias in our estimates of the characteristics of affected households.

years is also separated. The difference between households with and without a death is statistically significant for most of the variables as indicated in the table.

28. A notable characteristic is that households without an adult death were smaller, with an average of 4.5 members compared to an average household size of 5.1 for those that experienced a PA death, supporting findings from other studies (Masanjala 2005; Mather *et al.* 2005). The larger household size in households affected by a PA death suggests that the labor constraints resulting from the loss of a PA adult will be offset to some extent.⁹⁵

⁹⁵ Ill individuals may move into different households prior to their death in order to get care from close relatives and avoid expenses associated with being transported back to their native village after death (for example, the adult child moving back to their parents residence in their native village). Evidence elsewhere in Africa supports this (Beegle 2005; Chapoto and Jayne 2005). This would mean that the death is not of a "permanent" household member, but an extended family member, lowering economic implications for the household in which the death occurs.

29. Looking more closely at household composition, we find that households with a prime-age death tend to have double the number of older adults (those aged 65 years and above). Since HIV/AIDS primarily affects people in their prime, one consequence is to leave most households relying on the elderly, and indeed, households that have experienced a prime-age death and head/spouse death are headed by older individuals (48 years and 46 years, respectively compared to 42 years).⁹⁶

Table 5.2: Characteristics of households with and without deaths

<i>Household characteristics</i>	Household with no PA death	Household with PA death	Household with head/spouse death
<i>Demographic characteristics</i>			
Household size	4.50	5.06*	4.36
Number of children (0-14 yrs)	2.08	2.34*	2.22
Number of adults (15-64yrs)	2.25	2.39*	1.96*
Number of older adults (65+ yrs)	0.16	0.32*	0.18
Dependency ratio	1.06	1.34*	1.49*
Any orphans (0-17 yrs)	0.15	0.50*	0.63*
Any paternal orphans (0-17 yrs)	0.12	0.39*	0.53*
Any maternal orphans (0-17yrs)	0.08	0.25*	0.18*
Any double orphans (0-17 yrs)	0.04	0.13*	0.06
<i>Household head characteristics</i>			
Head education qualification (% completing level of education)			
No education	28.1	29.1	41.6*
Some primary education	54.6	53.9	45.0*
Post primary education	17.0	16.5	12.9*
Female head (%) ¹	21.9	45.5*	71.7*
Household head age	42.2	48.1*	45.9*
<i>Household economic status</i>			
Per capita expenditure (MK per year)	24,892	28,504	27,297
Poor (%)	43.6	42.6	42.1
Asset Index (ranges from 1-5)	2.99	3.06	3.04
Number of households	10,808	472	288

Notes: * indicates statistical significance at 1 percent in the difference between households with and without a PA death, and between households with and without the death of a head/spouse. It should be noted that the higher number of orphans is likely the result of the PA death itself (i.e. the death of one or both of the parents). Similarly the higher number of female headed households will result from the death of the male-head of the household.

Source: National Statistical Office, IHS2.

30. The dependency ratio rises from an average of 1.06 in households that did not experience a PA death to 1.34 and 1.49 in households that experienced a PA and head/spouse death, respectively. Another obvious demographic impact is the increased probability of having an orphan in the household. Households with a PA or head/spouse death were three times more

⁹⁶ HIV/AIDS epidemic is often cited as creating a new generation of children who are raised by grandparents. Annex 5A presents some statistics on the prevalence of households in which a child resides without either parent (either due to being orphaned or fostered). Twelve percent of households are headed by a grandparent of a child 0-17 years with no parent resident; likewise, twelve percent of households have a children 0-17 years with neither a parent in-residence nor a grandparent as the household head.

likely than other households to have an orphan co-residing, and the issue of orphanhood is discussed in greater detail below.

31. Households that experienced a PA death or head/spouse death tend to have a larger proportion of household heads that have no education qualification, indicating that more deaths occurred among educated PA adults/heads. Supporting this correlation is the fact that per capita expenditure, non-poverty status,⁹⁷ and asset index⁹⁸ of households that experienced a PA or head/spouse death are slightly higher than households that did not experience these deaths.

32. Perhaps the most striking difference in characteristics of households that experienced a death is that most of them are female headed. The average percentage of female headed households is 22 percent in households without a PA death, but 46 percent in households with a PA death, and 72 percent of households with a head/spouse of head death. This reflects the fact that the majority of PA deaths that are not spouses are adult children, who are more likely to reside with their mother than their father if their parents do not live together as well as the higher mortality of fathers (who are on average several years older than mothers).

HIV/AIDS and Agriculture

33. In IHS2 household data there is no indication of different cropping patterns between households that were affected by a PA death or head/spouse death and those that were not affected (not shown). The total cultivated land area and the per capita cultivated land areas are similar across the households. Similarly, the proportion of land devoted to selected crops is similar across the affected and non-affected households. One plausible explanation contributing to this could be that households have spare agricultural labor (indeed, we already noted the slightly larger average household size for those affected by PA deaths). Another compelling reason why diversification to other, less labor-intensive crops (e.g., cassava) may not be apparent as a response to a PA death is that crop diversification in Malawi has not been successful for all land holdings. Tobacco is the notable exception, and this cash crop has been adopted by a number of farmers. From the IHS2, we are able to identify those households that were producing tobacco in the last 5 years, but have stopped, to see if a PA death affects the choice to produce tobacco.

34. Table 5.3 shows results from a probit regression of households that are no longer producing tobacco, conditional on growing tobacco within past 5 years. Marginal effects are significant for the incidence of death and for chronic illness. These results present some evidence of shift away from labor/input intensive and high value crops in households affected by a prime-age death or chronic illness. Female-headed households are 11 percentage points *more* likely to stop producing tobacco if they were producing it in the last 5 years. This supports the finding by

⁹⁷ Note that this is poverty status of households in Malawi and not the population-weighted poverty headcount for the country which is higher since poorer households are larger.

⁹⁸ We created asset indexes using a factor analysis as proposed in Filmer and Pritchett (2001). The asset index is developed from a long list of assets that were reported in the survey, and includes: consumer durable assets, livestock, production durables, and dwelling characteristics. It is then converted into an index ranging from 1-5, where 1 indicates the 20% of households with lowest asset index and 5 is assigned to the top 20% of households by asset index value. The full list of assets and the relationship between the asset index and per capita expenditure is provided in Annex 5A.

Yamano and Jayne (2004) that suggest loss of knowledge and skills for production of high value cash crops due to male PA adult deaths in a household in Kenya. Land holding is associated with reduced probability of exiting tobacco farming; it is small holders who are more likely to stop tobacco farming.

Table 5.3: Probit regressions for household no longer producing tobacco, among household growing tobacco 5 years earlier

	Marginal effects
Total hectares owned	-0.063***
Household head age	0.002***
Female household head [∇]	0.111***
Head has some primary education [∇]	0.026
Head has some post primary education [∇]	0.009
Poor household [∇]	0.024
PA death in past two years [∇]	0.081*
PA who is chronically ill [∇]	0.076***
Central region [∇]	-0.018
North region [∇]	-0.048
Pseudo R ²	0.06
Number of households	2,010

Source: National Statistical Office, IHS2

Notes: [∇] indicates binary indicator variables (=1 if true, else 0). * indicates significant at 10%; ** significant at 5%; *** significant at 1%.

HIV/AIDS and Gender

35. HIV/AIDS has a number of dimensions that affect women more than men. As discussed above, women have higher prevalence of the disease and are more at risk of infection. In addition, within households, as well as across households, women and girls bear the brunt of the burden of care for HIV patients due to the gendered nature of division of labor in Malawi (Nankhuni and Findeis 2003). Since HIV/AIDS mostly affects people in their productive years, older women are increasingly taking the care role, even for orphans. For example, a survey in South Africa showed that two thirds of caregivers were women with a third of them above age 60 (Steinberg *et al.* 2002 cited in UNICEF 2004). In the IHS2, there was no question directly asking for time use in care of patients or care for other members of the family, so it was not possible to directly check this result. However, girls are about 40 percentage points more likely to do chores than boys, indicating that girls are more likely to care for the sick members of the household. Beyond roles as care-givers, women may also be more vulnerable to economic impacts of adult deaths if they lack title to property, either legally or from a cultural tradition. This issue is explored in greater depth below.

HIV/AIDS and Household Assets

36. Unlike some other diseases, HIV/AIDS-related illnesses are severe and debilitating over a prolonged period of months preceding the death. Households faced with care of AIDS patients may have to sell most or all of their household assets before the death of the patient. In addition, the death itself carries high costs.

37. Households in the IHS2 report information related to the “costs” of deaths in two ways. For households that experience a death in the past 2 years, the household reports the total value of land and other assets lost after the death (due to inheritance traditions). For all households, regardless of having a death within the household in the past two years, the amount of money spent on funerals in the last 12 months is recorded. Some households that had no death nonetheless report spending on funerals, presumably cash or in-kind contributions to other households.

38. One in six households (14 percent) report losing some assets or land after the death of a PA household member (Table 5.4). A larger proportion of the poor (17 percent) lost land after experiencing a PA death compared to the non-poor (13 percent). Conditional on experiencing such loss, the average value of lost land/assets was MK 21,648. On average the poor that experienced a PA death lost MK 15,703 and the non-poor that experienced a PA death lost an average of MK 27,616. These losses are 24 percent and 22 percent, respectively, of the household’s total annual expenditures. Losses associated with prime-age deaths are, as would be expected, of higher average value (more than 3 times) compared to deaths of younger (under 15) and older (over 50) household members. When a household experienced a male PA death, the amount of land lost by the household is almost 1.5 times as much as that lost by households that lost a female PA (MK 24,329 and MK 16,234, respectively), indicating gender differential impacts of land lost.

Table 5.4: Asset and land losses related to deaths in last 2 years

	All	Household with PA death			Household with other, non- PA death		
		Non-poor	Poor	All	Non-poor	Poor	All
Percent of households losing assets/land	9.3	12.8	16.6	14.4	8.7	5.0	7.1
Among households with any loss:							
Value of land/assets lost (MK)	13,654	27,616	15,703	21,648	8,145	3,308	6,629
Loss (% annual hh expenditure)	14.9	21.9	24.2	23.1	8.3	6.4	7.7

Source: National Statistical Office, IHS2.

39. Analyzing the pattern of property grabbing at regional level is interesting because of the differences in cultural practices across the regions. The North is mostly patrilineal (Mtika and Doctor 2002) where upon death of a male, all possessions of the household remain within the males’ household including children. The widow can choose to stay with her husband’s family (and possibly be taken in as the new spouse of her husband’s brothers or other male relatives) or go to her home/remarry. At marriage, the female’s family gets a significant sum of money or cattle as bride price “*lobola*”—so, from a traditional perspective, she is supposed to remain with the husband’s family. Conversely, the South is predominantly matrilineal where no bride price is paid, except a chicken and some basic household utensils and wife’s clothing provided by the man’s family. After marriage the couple traditionally lives in the woman’s home and land inheritances go through the woman’s family. The Central region has both inheritance systems. These patterns are reflected in the migration data in the IHS2, in which married women in the North were much more likely to be migrants in their current community. Women in the South were most likely to be residing in the community in which they were born (rates are 15 percent North, 33 percent Central and 53 percent South).

40. Given the traditions related to marriage and inheritance, one would therefore expect more land grabbing to occur in the North upon the death of a prime-age male, as the surviving widow would have limited rights to the assets. In addition, being more likely to be migrants may also raise vulnerability of women to asset losses when their partner dies. However, the data do not support the expected pattern of land grabbing proposed by traditions by region. In the South and Center, loss of a male adult affects relatively more households; average land values lost in the South and Centre are also the largest, amounting to more than 10 times the average value lost by households in the North (not shown). Interestingly, among households in the north, the average value of land lost after a male PA death is lower than the average land value lost after a female PA death, while the reverse is true for the Central and South regions.⁹⁹ Moreover, households in the North are less likely to have lost land after a PA death, regardless of whether it is a female or male who dies, and the total average values of land lost as a share of total annual household expenditures is also smaller (5 percent compared to 16 percent and 29 percent of that lost in the Center and South, respectively).

41. These results may indicate that households in the South and Central regions are increasingly not settling on their original/customary land, and thereby not following traditions. That is, matrilineal influence on people’s wealth transfer behaviors may be changing (Mtika and Doctor 2002). One factor influencing these potential changes could be population pressure. In the North, land is relatively more abundant thus easing pressure for land grabbing relative to the Central and South regions. The 1998 population densities are 46, 114, and 146 people per square kilometer in the North, Central and South, respectively (NSO 2000).

Table 5.5: Funeral expenses in last 12 months

	All	Household with PA death			Household without PA death		
		Non poor	Poor	All	Non poor	Poor	All
% of households with any funeral expenses	11.9	34.4	30.2	32.6	11.3	10.6	11.0
Among households with this expenditure:							
Funeral expenses (MK)	962	3,629	1,241	2,608	970	427	741
Expenditure (% of pc expenditures)	0.9	2.3	2.1	2.2	0.8	0.7	0.8

Source: National Statistical Office, IHS2.

42. Funeral costs are the other death-related expense that households face. Funeral expenses in the IHS2 were reported by all households for the last 12 months. Since many households contribute to funerals for other households (either with their family network or neighbors/friends in the community), funeral expenses are also observed in households that themselves had no death in the last two years. Twelve percent of all households reported some expenditure on funeral expenses in the past 12 months, which averaged MK 962 (Table 5.5). Social networks and capital are evident, 9 percent of households that spent on funerals did not experience any death in past two years. These households spent about one quarter of the amount that households who experienced a death in past 2 years spent on funerals.

Economic Implications of Illness in Households

⁹⁹ It should be noted that the sample sizes are small as we divide the data into finer categories.

43. Illness is very prevalent in Malawian households, with two thirds of all households reporting that someone was ill or had an injury in the past two weeks (Table 5.6). Over one quarter (28 percent) of all respondents reported that they suffered from some illness in the last two weeks. Illness rates were highest for those 50 and older (41 percent), followed by under 5 (39 percent), prime-age adults 15-49 (26 percent) and those 5-14 years (19 percent).

Table 5.6: Incidents of illnesses in households

	Percentage of total households
<i>Households with ill members in past 2 weeks</i>	67.8
<i>Households with ill members with AIDS symptoms</i>	
All households	34.2
Among households with ill members	50.5
<i>Households with ill members with AIDS¹ symptoms</i>	
All households	52.7
Among households with ill members	77.7
<i>Households with seriously ill members</i>	45.4
<i>Households reporting that someone had to stop working to care of ill person</i>	
All households	22.5
Among households with seriously ill members	49.5
<i>Households with chronically ill individuals</i>	31.3
<i>Households with AIDS related chronic illnesses</i>	
All households	10.6
Households with chronically ill members	33.8
<i>Households with AIDS² related chronic illnesses</i>	
All households	54.8 ³
Households with chronically ill members	79.3

Source: National Statistical Office, IHS2.

Notes: 1. This definition of AIDS related symptoms included fever/malaria or any of these symptoms: diarrhea, vomiting, sore throat, upper and lower respiratory, flu, skin problem, TB, STDS, unspecified long illness, pain in limbs, joints/swelling.

2. This definition of AIDS related chronic symptoms includes those that responded yes to questions like: "Have you lost a lot of weight recently? Are you usually feverish? etc." in addition to the other set of AIDS-related symptoms.

3. This would be 25 percent of the whole sample if the percentages were restricted to those that reported being chronically ill. However, some individuals who did not report being chronically ill also answered yes to questions like "Have you lost a lot of weight recently? Are you usually feverish? etc."

44. The majority of illnesses are not diagnosed by medical practitioner under-scoring the difficulty of assessing medical status from a traditional integrated household survey (which doesn't include biomarkers); 27 percent were diagnosed by a medical practitioner at either a hospital or other medical facility. The rest were predominantly self-diagnosed or assessed by family and friends (72 percent). Only 1 percent were diagnosed by traditional healers. Of course, for purposes of monitoring the actual prevalence of HIV/AIDS, using these very broad and sometimes vague symptoms would not be recommended. Moreover, many HIV-affected individuals could be asymptomatic. However, these statistics do give an indication of the extent of the epidemic and its effects on household welfare.

45. Of those households that reported an ill person, 50.5 percent reported symptoms that can be considered HIV/AIDS related (that is, they experienced the following symptoms: diarrhea, vomiting, sore throat, upper and lower respiratory, flu, skin problem, TB, STDS, unspecified long illness, pain in limbs, joints/swelling). If Malaria/fever is added to these symptoms as an indicator of AIDS related illness, the proportion of households reporting AIDS related symptoms increases to 78 percent, which is similar to the proportion of deaths estimated to be caused by HIV/AIDS in a study done in rural Malawi, using verbal autopsy (Doctor and Weinreb 2003).

46. Chronic illness is another indicator to show how many of the individuals that were sick may have been HIV/AIDS positive. One-third of households had a chronically ill person in the household. These people were chronically ill for an average of 7.8 years. Among these households, one-third reported someone chronically ill with the following symptoms: chronic malaria, TB, HIV/AIDS, sores that do not heal, pneumonia, pain of limbs joints and swellings, and STDs. These are referred to as households with AIDS related chronic illnesses. When other AIDS related symptoms are included (that is, positive responses to questions like: “Have you lost a lot of weight recently? Are you usually feverish?” etc.), the number of households that have potentially HIV/AIDS- positive individuals increases to half of all households. This is an even larger number of households than those that reported having chronically ill individuals. This may suggest that chronic illnesses are underreported or that the symptoms recorded are not associated with chronic conditions from the perspective of the individual.

47. Households spent an average of MK 1,257 on health expenditures in the last 12 months, which was, on average, just over 1 percent of the total aggregate expenditures of the household. Those that had an ill individual in the household spent more than three times (MK 1,629) the average health expenses in households with no ill individual (MK 476), where costs were presumably related to preventive care.

48. Hospitalization is not very common for households in Malawi. About one in five households (18 percent) reported hospitalization of any household member in the last 12 months. The average amount spent on hospitalization for those households that had a member hospitalized was MK1,416. Most hospitalizations were associated with medical facilities (16 percent of all households) compared to use of traditional/faith healers (3 percent of all households). A large share of households that used a traditional healer (45 percent) also indicated that they had to borrow money or sell assets to pay for the hospitalizations while only 25 percent of those that used a medical facility had to borrow or sell assets. This means that hospitalization costs, when incurred, are quite significant despite the seemingly low share of health expenses in the household budget.

49. Household members also indirectly pay for their illnesses through opportunity cost of time. Of those individuals that were ill in past two weeks, more than half (55 percent) stated that they had to stop their normal activities due to the illness. On average these people spent 4.5 days being ill. Of these, about half of the affected households indicated that someone else in the household had to stop their normal activities to help care for the ill individual, indicating potential loss of income to the household.

Household Coping Mechanisms

50. Community assistance was reportedly the most important coping mechanism by households against a death or serious illness/injury shock in the IHS1 (Masanjala, 2005). In IHS2, the responses do not reveal the same pattern, however. Table 5.7 summarizes the most important responses to death shocks that occurred in past 5 years.

Table 5.7: Responses to deaths of household members that occurred in past 5 years

<i>Response to death event (%)</i>	Death of household head	Death of working member	Death of other family member
Dis-saved / borrowed money	12.0	19.3	18.5
Sold assets, land, or animals	7.6	5.9	4.3
Fostered out children	2.4	1.1	0.9
Removed children from school	0.2	0.0	0.1
Reduced consumption and expenditures	2.0	1.2	1.0
Increased economic activity	21.2	13.4	9.1
Sought spiritual help (prayer and divination)	11.8	11.5	13.3
Received help from government, religious organizations and NGOs	0.8	1.3	0.5
Other	0.6	0.7	0.5
Did nothing/don't know	41.4	45.6	51.8

Source: National Statistical Office, IHS2

51. Households helped themselves by using their past savings and borrowing (mainly from relatives). Households also felt the impact of the death by taking drastic measures such as fostering out children and in rare cases removing children from school. Although religious institutions were not significant in giving material help, a large number of households relied on prayer to cope with the deaths. The majority of affected households (about half) were probably helpless, mentioning no copying mechanism to the death shocks. The responses indicate that government, religious institutions and governmental/non-governmental NGO's are not significant in helping households to regain their former welfare after experiencing a death shock, with mostly less than 1 percent of the households reporting this mechanism. The situation is different for illness and accidents, showing that 12 percent relied on government and institutions to regain their original status. This may just mean these institutions provided medical help.

Orphans and HIV/AIDS

52. A major implication of HIV/AIDS is the increased number of orphans. Orphanhood can have serious implications for the current well-being of children as well as their socio-economic situation in adulthood. Orphans can also be psychologically affected. Further, there are some reports indicating that HIV/AIDS, poverty, macroeconomic policies, and food shortages may have rendered traditional coping strategies (informal safety networks of the extended family systems) irrelevant (Garbus 2003).

53. In Malawi, the number of orphans (defined as children under the age of 18 without one or both parents alive) continues to increase, rising from an estimated 560,000 in 1990 to 1,000,000 in 2003 (UNAIDS, UNICEF, and USAID 2004). The estimated number of orphans from IHS2

data is 826,147 making up 13 percent of the children population.¹⁰⁰ Of all children under the age of 18, 13 percent have lost one or both parents. Seventeen percent of all households in Malawi have at least one single or double parent orphan. Interestingly, the patterns of households with orphans and the population of children are the same across urban and rural areas. Although percentage of orphans is almost the same across the three regions (12 percent in north and central and 14 percent in south), about half of these orphans live in the south (49 percent) while 40 percent live in the central and 11 percent live in the north reflecting the population distribution across the regions.

54. Most of these orphans are paternal orphans (57 percent), while 22 percent are maternal orphans, and 21 percent are double orphans. As a percentage of all children, 8 percent are paternal orphans, 3 percent are maternal orphans, and 2.7 percent are double orphans, with equal numbers of girls and boys. As expected, the likelihood of becoming an orphan sharply increases with age, and by age 17, about a third of children have lost at least one parent.

55. The vast majority of orphans in Malawi are absorbed in relatives' households through the extended family system. Consequently, the prevalence of child-headed households is a very rare phenomenon: only 19 households in the IHS2 (0.17 percent overall) had a household head less than 18 years, with 11 headed by an orphan. The majority of orphaned children reside in households in which they are a relative of the household head, and in the IHS2, only 1 percent of the orphans live in households where they are not related to the household head.

56. Living without parents is not unique to orphans: among non-orphaned children, 15 percent were living with one parent and another 10 percent were living with neither parent. The high rate of fostering among non-orphans and its implications may be one reason why orphanhood itself does not always prove to be a strong indicator for disadvantage. For example, MDHS2004 finds no enrollment differential between orphans and non-orphans (NSO and Macro 2005) Doctor's (2004) analysis of school enrollment in the 1998 census data concluded that the lack of evidence of a disadvantage of orphans compared to non orphans can be explained by the extended family system.

57. Paternal orphans were more likely to live with the surviving parent (72 percent) while only 22 percent of the maternal orphans were living with their surviving father. This shows that losing a mother may have more devastating psychological effects. Nevertheless, loss of a father may have more serious economic implications, as fathers are more likely to be the breadwinners, and families are more likely to lose property when a male adult dies than a female.

58. Table 5.8 shows that there are considerable differences between households with no children and those with any children (orphaned or not). The former are smaller and have higher wealth. Households with children, regardless of their status, are much larger and poorer. Households with orphans have larger household size, larger number of children and are more likely to be headed by females or older heads. However, there is no statistically significant

¹⁰⁰ The precise numbers of orphans vary across studies, due to different data sources as well as different age cut-offs used to define orphans. The UN just recently revised the age ranges it uses from under 15 to under 18 years which is the range we use in analyzing the IHS2 (UNAIDS, UNICEF, and USAID 2004). Our analysis of orphans is restricted to children 0-17 years.

difference in per capita expenditure and asset holdings of households with orphans (and perhaps with some non-orphaned children) and those with children of whom none are orphans. Doctor (2004) constructs an asset index from the 1998 census and also finds little difference—the asset index measure was 3.66 in households with orphans, while it was 3.77 in households with non-orphans. Both sets of analyses are limited, however, in that we do not know the asset holdings of the households that take in orphan prior to fostering the orphan or the economic standing of the household in which the orphan resided prior to orphanhood and relocation.

Table 5.8: Characteristics of households with and without children and orphans aged 0-17

<i>Household characteristics</i>	All	No children	Non-orphaned children, no orphans	Single orphan living with surviving parent	Double and/or virtual double orphans
Household size	4.52	1.78	5.03	5.39	5.84
No. of children (0-14 yrs)	2.09	0.04	2.51	2.66	2.75
No. of female adults (15-64 yrs)	1.15	0.62	1.23	1.42	1.43
No. of male adults (15-64 yrs)	1.11	0.80	1.18	1.08	1.35
No. of older female adults (65+ yrs)	0.09	0.17	0.05	0.14	0.20
No. of older male adults (65+ yrs)	0.08	0.14	0.06	0.09	0.12
Female household head (%)	22.9	26.7	15.9	50.8	35.0
Age of household head	42.4	46.4	40.2	46.6	48.1
P.c. expenditure (MK per year)	25,041	43,726	20,756	20,976	23,295
Poor (%)	43.6	12.2	50.2	54.0	46.0
Asset Index (ranges from 1-5)	2.94	2.83	2.93	3.04	3.38
Number of households	11,280	1,995	7,375	1,396	514

Source: National Statistical Office, IHS2.

Note: Virtual double orphans are single orphans who do not live with their surviving parent. 88 households have both a single orphan living with surviving parent and a virtual orphan.

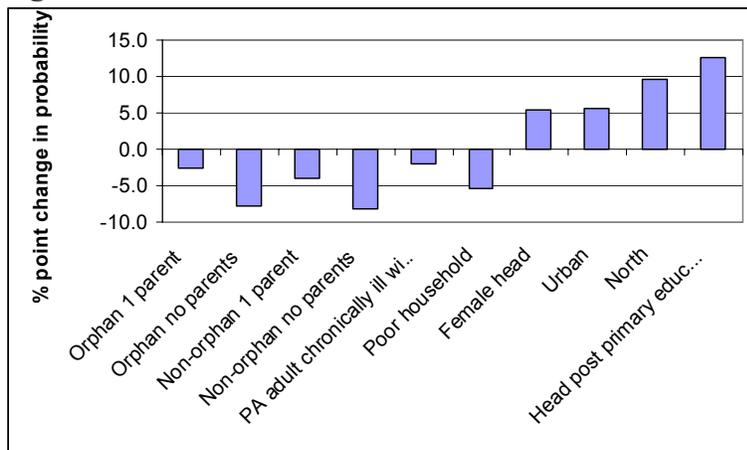
59. Our regression results for children’s schooling are presented in Figure 5.5. Orphanhood is associated with lower probabilities of attending school. Secure single orphans (single orphans living with one parent) are 2.7 percentage points less likely to attend school compared to children living with both parents. Children who are double orphans or living away from parents who are alive have statistically lower school attendance. The coefficient on non-orphan children living with one parent captures the effect of living in a broken/non-traditional family which shows that the probability of such children attending school is 4 percentage points lower from the mean. Attendance of children who are double orphans or not living with either surviving parent is 8 percentage points lower (from a mean of 82 percent) than their counterparts living with both parents. When disaggregated by gender (not shown), non orphaned girls who do not live with their parents have much lower attendance probability, by 11 percentage points, compared to non orphans living with parents; the differences among boys is more muted (4 percentage points). This is consistent with a pattern whereby fostering of girls is especially associated with domestic work in other peoples’ households resulting in lower schooling.

60. The event of a prime-age death in the households in past two years was not associated with lower probability of attending school. However, having an ill prime-age household member who had AIDS symptoms was associated with a small but statistically lower probability of school attendance (about 2 percentage point reduction). Children in poorer households or households with un-educated household heads have lower probability of attendance. Children in

households with higher education are more likely to attend. Female headship, controlling for covariates including poverty status and education of the head, is associated with higher school attendance. Urban residence and living in the North region are also associated with higher school attendance. Nankhuni and Findeis (2004) showed that lack of fuel wood in the South and Central regions partly explain the low school attendance in these regions relative to the North.

61. Death of a mother may disproportionately impact children’s schooling more since in Malawi, due to traditional division of household labor along gender lines, the presence of more women in a household was found to be associated with lower domestic work burden on children and higher probabilities of children’s school attendance (Nankhuni and Findeis 2003 and 2004). The impacts may also be particularly concentrated for children in poor households. Adult mortality can affect schooling through orphan status but also through deaths of income-earning adults in the households (regardless of whether the deceased was the parent of the child). That is, the schooling of children who live in households that experience an adult death can be affected even if the parental survival status is unchanged.

Figure 5.5: Probit model for children’s school attendance (Age 6-17)



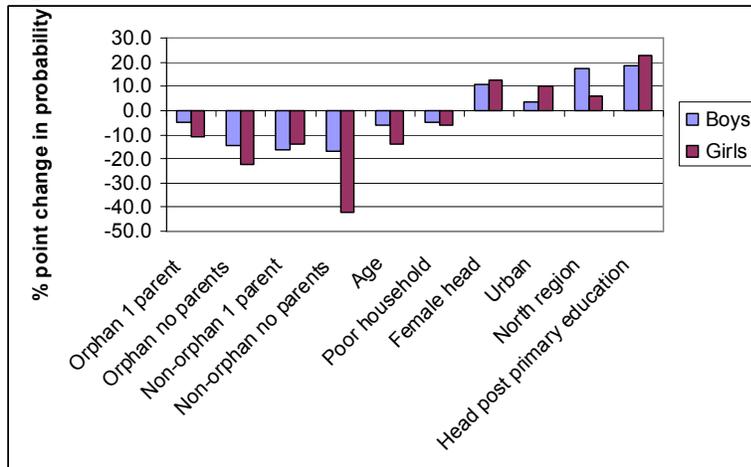
Notes: “Orphan 1 parent” is a single orphan who lives with the surviving biological parent. “Orphan no parents” is either a double orphan or a virtual double orphan. “Non-orphan 1 parent” is a non-orphan who lives with only one of the biological parent. “Non-orphan no parents” is a non-orphan who does not live with any of the biological parents (fostered child). Results of the full model are in Annex 5B.

62. Considering that percentage of children orphaned also increases significantly with age, a separate school attendance regression was estimated for children age 15-17. The results show much larger marginal effects. The impacts are particularly large for adolescent girls who do not live with any of their parents: orphan adolescent girls not living with any parent are one-third less likely to attend school (from a mean attendance rate of 64 percent of all girls 15-17 years). Those adolescents fostered out, but whose parents are alive, are even less likely to be attending school (Figure 5.6).

63. Orphanhood and living away from parents were not associated with higher absenteeism among students aged 6-17 years. Although the living arrangement variables were not associated with absenteeism, the presence of a chronically ill adult with HIV/AIDS symptoms was associated with statistically higher likelihood of being absent. Students in households with an ill adult were 6 percentage points more likely to miss some school. Again, mirroring the results on

school attendance, children in poor households or households with less educated household heads had higher rates of absenteeism. Female headship, which raised attendance probabilities, was generally not associated with absenteeism.

Figure 5.6: Probit model for children’s school attendance (Ages 15-17)



Notes: “Orphan 1 parent” is a single orphan who lives with the surviving biological parent. “Orphan no parents” is either a double orphan or a virtual double orphan. “Non-orphan 1 parent” is a non-orphan who lives with only one of the biological parent. “Non-orphan no parents” is a non-orphan who does not live with any of the biological parents (fostered child). Results of the full model are in Appendix Table 3.

64. Overall performance of children in school can be captured by seeing whether they are in the right grade for their age. The results (not shown) suggest that double or virtual double orphans and children who do not live with either parent are more likely to be overage for their class. The results also show that children who live in a household with a PA-adult that is chronically ill and suffering from AIDS-related symptoms, are also more likely to be overage. Surprisingly those living in a household that experienced a death in past two years were also less likely to be overage.

65. Double orphans and children living with one or neither surviving parent are significantly more likely to be engaged in an economic earning activity in the past week. Participation rates for fostered children were particularly high, about 40 percent higher than other children. Girls are less likely than their male counterparts to be working in an income generating activity. Children residing in households with ill household members are also statistically more likely to be working. Living in urban and central region is associated with greater propensity to be working. Finally, although female headship was associated with greater school attendance, all else equal, we find that female headship is associated with higher probability of child work at the same time.

66. Orphanhood is not associated with a greater likelihood of doing chores, although being a fostered child living without either parent is associated with marginally higher propensity of chore work. As would be expected, we find that girls are statistically more like to have done some chores yesterday. Surprisingly, presence of ill household members, whether they are prime-age with AIDS symptoms or others who need care, is not associated with higher likelihood of chore work. This may be due to failure to specifically mention time for care of ill individuals in the time use and labor module.

IMPACTS OF HIV/AIDS AT THE MACRO LEVEL

HIV/AIDS and Economic Growth

67. Empirically estimating the link between HIV/AIDS and economic growth is complicated. Models of the impact of HIV/AIDS on the macro economy require complex modeling and the findings in the literature are mixed, although there are potentially large impacts in countries hardest hit by the epidemic (Bloom *et al.* 2003).

68. For Malawi, Haacker (2002) estimated that in the medium-term (10-15 years), Malawi will experience a 4.8 percent reduction in GDP per capita because of HIV/AIDS. Most of this decline would be due to lost knowledge and skills due to AIDS mortality in the workforce. Another study (Cuddington and Hancock, 1994) estimated that Malawi's average per capita real GDP growth rate would fall by 0.1-0.3 percentage points between 1985 and 2010. Generally, studies that use macro-simulations find some modest negative relationships between HIV/AIDS and economic growth (Arndt and Lewis 2001, Kambou, Devarajan and Over 1992, Cuddington and Hancock 1994), while those that use cross-sectional country data like Bloom and Mahay (1997), and Bloom *et al.* (2004) show no statistical significance. However, Bloom *et al.* (2003) argue that macroeconomic impact studies underestimate the impact of the epidemic because of the lag between infection and illness/death, so that prevalence rates may not necessarily correlate with economic downfall immediately. Taking a slightly different approach, Jamison *et al.* (2001) develop a definition of economic welfare which includes both the value of life (from increased years and quality of life) and a conventional definition of income (GDP per capita). This study concluded that increased mortality due to HIV/AIDS caused a reduction in economic welfare of 5.3 percent between 1985 and 2000 in Malawi.

69. Traditional macroeconomic models may fail to accommodate the impact on agricultural output, food security, erosion of networks, social capital, and capacity. Bell *et al.* (2003) argue that long-run economic costs are almost certain to be higher and possibly devastating. In their model, they emphasize the importance of human capital and transmission mechanism across generations. That is, by killing people in their prime ages, AIDS weakens and eventually destroys human capital that has been accumulated over long periods of time. It also undermines the process of transferring and generating human capital as children of deceased parents may be less likely to be educated/receive knowledge from their care givers and more likely to be working and be infected.

70. One of the biggest burdens on public expenditure caused by HIV/AIDS is the cost of antiretroviral therapies (ART). By the end of 2004, demand for ART was 140,000 (WHO 2005). The WHO "3 by 5" treatment target for 2005 corresponds to 65,000 patients, while the Malawi government set its target at an ambitious 80,000 (WHO 2005). However, just to reach the WHO "3 by 5" target will cost between US\$ 90 million and US\$ 96 million, and WHO estimates a funding gap of around US\$ 54 million to reach this target.

71. At the moment current public expenditure on health is 4.7 percent of 2004/05 GDP (MEPD 2006). Reasonable estimates of the cost of funding ART for all those with AIDS would require much greater expenditure levels for the health sector (not only for the drugs and their

delivery but also to drastically increase rates of HIV/AIDS testing in the population). It is estimated that Malawi would need to spend about US\$ 207 million, approximately 10 percent of its GDP, to treat all those in need of therapy in 2005.¹⁰¹ However, the US\$ 54 million shortfall to reach the “3 by 5” target is only about 2.5 percent of Malawi’s 2005 GDP which makes it a goal within reach.

HIV/AIDS and Access to Public Goods and Services

72. HIV/AIDS also has repercussions on the government’s ability to provide goods and services. As morbidity and mortality of public employees increase, the public sector is unable to fulfill its obligations. An AIDS impact study by the Malawi Institute of Management (MIM 2002) found that between 1990 and 2000, there was an increasing trend of attrition in the five public sector organizations that were studied,¹⁰² and that deaths were a major cause of this attrition. The study also estimated that HIV/AIDS-related expenditure may have cost the Malawi public sector between MK 6.6 million and MK 9.6 million per annum during that period. However, this was an underestimate, since only 10 percent of the deaths were assumed to be HIV-related, and costs of funeral attendances by relatives/colleagues of the deceased and other indirect costs were not accounted for. In addition, Malawi would have increased personnel health care costs, funeral costs, and terminal benefits for deceased staff. UNDP (2001) reported that in Malawi and Zambia, five-to six fold increases in health worker illness and death rates have reduced personnel and increased stress, overwork and fear of personal safety in remaining staff.

73. In the health sector, HIV/AIDS significantly increases demand for services while reducing the quantity and quality of supply of services, as health professionals become infected (Haacker 2002). In Malawi, 70 percent of hospitalizations have HIV/AIDS related symptoms (MoH and NAC 2004). A study of 1,225 patients aged between 30-40 years who were admitted in a hospital in Blantyre between 1999-2000 showed that 80 percent were HIV-positive (Lewis *et al.* 2003 cited in Arrehag *et al.* 2006). AIDS may also be fueling other epidemics. In 2001, a national survey concluded that prevalence rate in TB patients was 77 percent (MoH 2005 cited in Arrehag *et al.* 2006). The health system is mostly not able to cope with this high demand for services. As discussed in Chapter One, Malawi has one of the lowest physician/patient ratio, only 1.1 physicians per 100,000 patients/population, and only about 1.3 beds per 1,000 patients. The physician ratio does not include untrained/informally trained physicians. In 2004, there was only 1.1 physicians and 25.6 nurses per 100,000 patients and 1.34 beds per 1,000 patients (Arrehag *et al.* 2006). As a result bed occupancy rates can be as high as 162 percent at the Lilongwe Central Hospital (Arrehag *et al.* 2006).

74. Substantial donor funding has been made available. However, a main constraint for scaling up ART has been Malawi’s lack of absorptive capacity for the funds that have already been released. After a slow start, good progress has recently been made and by December 2005

¹⁰¹ The first-line antiretroviral drug regimen costs about US\$ 250 per person per year (WHO 2005), although prices of antiretroviral drug have been falling rapidly.

¹⁰² These included the Ministry of Health, the Ministry of Education and Human Resources, the Ministry of Agriculture, Irrigation and Food Security, the Ministry of Water Development, and the Malawi Police Service, which together represent 79% of all established posts in the public sector

there were 60 public sites (hospitals and clinics) delivering ART to about 30,000 patients (up from 23 sites and 13,000 patients at end-2004), and another 23 private facilities were delivering ART to 977 patients with Global Fund drugs (MoH 2006). Hence, this covers 59 percent of the targeted 65,000 in the WHO ‘3 by 5’ initiative, and at this rate of increase the target could be reached in 2006.

75. A summary of some of the community variables that may be relevant in mitigating HIV impacts derived from the HIS-2 are summarized in Table 5.9. In general, health conditions have been deteriorating or remained stagnant over the years: only about a third of the households lived in communities where there was an improvement in the availability of health care, and 48 percent lived in communities where health availability had worsened. Under one third of households were in communities with a health clinic, and only half of households reside in communities with drug availability at the nearest clinic (within or outside the community). About half of the households were in communities that had access to some form of malaria control program such as mosquito net or insecticide provider. Programs for supporting or caring for people that are chronically ill from diseases such as AIDS or tuberculosis were less prevalent, with about 40 percent of households living in communities with such programs. Eight percent and 14 percent of households reside in communities with school feeding programs and MASAF (public works programs), respectively.

Table 5.9: Accessibility of community programs that may mitigate the impacts of HIV/AIDS, in 2005

<i>Community characteristic</i>	Percent of households
Health clinic in community	31.6
Nurse available at the nearest health clinic	87.8
Drugs always available at the nearest clinic	43.8
Place to purchase medicines (Panadol, etc.) in community	79.5
Malaria control programs in community	50.8
AIDS and other chronic illness care programs in community	38.9
School feeding programs at primary schools in community	7.6
MASAF program in community	13.9
Improvement in availability of health care in general ^Y	34.4
Improvement in willingness of members to help others ^Y	54.5
Improvement in willingness of members to donate cash ^Y	60.8
Improvement in participation of members in community activities ^Y	65.1

Source: National Statistical Office, IHS2.

Notes: ^Y Improvements were compared to five years before the interview date. If the response was better or much better, the response was considered an improvement over the past. Other responses included much worse, worse and about the same.

76. In the education sector, the supply of teachers has also become severely constrained, partly as a result of HIV/AIDS. Haacker (2002) estimated that in order to maintain 1996 pupil-teacher ratios of primary and secondary schools respectively, Malawi would need to train 3,729 teachers by 2000, of which 1,013 teachers (27 percent) will replace AIDS victims.

Institutional Response to HIV/AIDS

77. By 2004, the country had a national HIV/AIDS policy in place, which among other things, provides for an expanded basis for HIV testing and has a new National Strategic

Framework focusing on new emerging issues such as treatment (UNAIDS 2004). As part of its policy on HIV testing and treatment, Malawi finalized frameworks to scale up antiretroviral therapy, including a national HIV/AIDS policy, a two year plan to scale up antiretroviral therapy for 2004-2005, a human resource relief program for the health sector, antiretroviral therapy guidelines and training materials (UNAIDS/WHO 2005).

78. To reduce brain drain and improve capacity of the health sector, a new health sector-wide approach (Health SWAP) to help recruit and retain health workers has been put in place. To mitigate impacts on the private sector, a Business Coalition Against HIV/AIDS was also founded (UNAIDS 2004b). This has led to some companies adopting an HIV policy, with a notable example of the Electric Supply Corporation of Malawi (ESCOM) that implemented an HIV policy since 2002 and is currently distributing free ART to its employees and their dependents (Arrehag *et al.* 2006).

79. Current government response also includes increased involvement of the community including Faith Based Organizations (FBOs) and people living with HIV/AIDS. FBO's response to HIV/AIDS mainly involved home based care for those infected and care for orphans. Although there is still disagreement between FBOs and the government on ways to prevent infection, a new effort to incorporate FBO leaders in the fight against AIDS has been established through a faith based task force that was established in 2001 to bring policy formulators and FBO leaders in a forum where they can design ways to complement each other's efforts in the fight against AIDS.

CHAPTER 6: MACROECONOMIC DEVELOPMENTS AND IMPLICATIONS FOR POVERTY

INTRODUCTION

1. Sound macroeconomic policy has a direct impact on poverty reduction by promoting economic growth. Poor macroeconomic policies, on the other hand, cause low growth and also give rise to high and volatile inflation, interest rates, and exchange rates. These affect the poor negatively by eroding the value of their earnings, making it too expensive to take credit and invest in economic activities, and distorting the cost of inputs relative to outputs. Further, weak management of public finances leads to inefficiency in the allocation of scarce resources, and under-funding of the services necessary for wealth creation and poverty reduction.

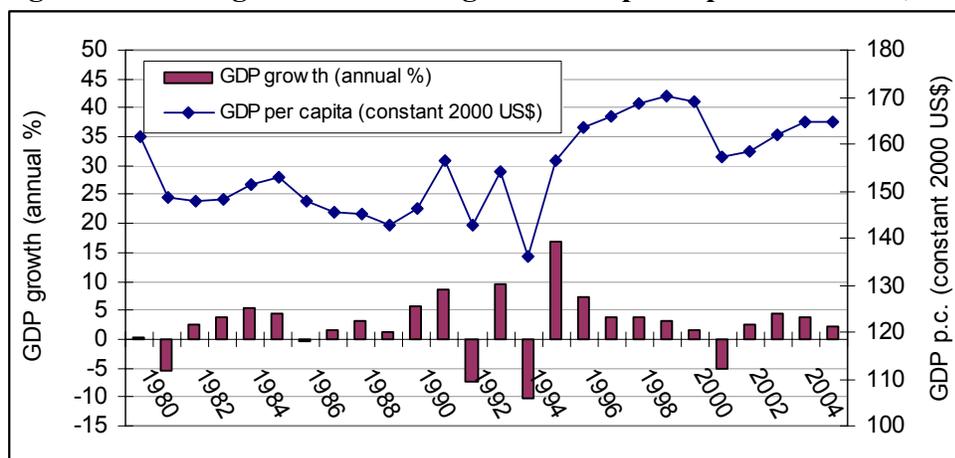
2. This chapter discusses changes in macroeconomic developments since the early 1990s and relates them to changes in poverty over the period. The next section focuses on the volatility and composition of GDP growth, and on changes in inflation, interest rates and the exchange rate. The following section examines the evolution of public expenditures in recent years. As discussed below, weak public financial management under the previous government has resulted in a rapid increase in the domestic debt stock, and the resulting large interest bill has translated in lower funding for the provision of public services.

MACROECONOMIC DEVELOPMENTS SINCE THE EARLY 1990S

Economic growth and its composition

3. Following very high volatility in the early 1990s, Malawi has experienced modest economic growth during the last decade, at about 3 percent on average during the period 1996-2005. As population growth has been above 2 percent per annum, this corresponds to a modest 1 percent increase in per capita incomes over the period. Further, GDP only has grown only at an average 0.7 percent per annum since the year 2000, and therefore, GDP per capita actually decreased during the last few years.

Figure 6.1: GDP growth and changes in GDP per capita in Malawi, 1980-2005



Source: National Statistical Office

4. GDP growth by sector has been highly volatile, reflecting the many formidable risks confronting households and investors (Figure 6.1). The single most important factor determining GDP growth volatility has been the impact of erratic weather patterns on agriculture. Agriculture accounts for almost 40 percent of Malawi's GDP and consists mainly of smallholder farmers, who account for about three quarters of agricultural production, and are mostly engaged in rain-fed maize production. The balance of the agricultural sector consists of commercial estates, producing mainly tobacco, sugar and tea. The performance of the agricultural sector during the past decade has been weak and highly erratic, with an average growth rate of 3 percent, which has fallen to less than 1 percent on average since the year 2000. This sluggish growth record is mainly due to the impact of recurrent drought conditions during 1991, 1994, 1997 and, most recently, in 2001 and 2005.

5. In addition to the lackluster performance of agriculture, poor economic growth has been exacerbated by an even worse performance in manufacturing and distribution. Constrained by high real interest rates (around 45 percent in nominal terms between 2000 and 2003), the manufacturing sector has averaged zero growth over the past decade. This is the result of a contraction (negative growth rates) during the period 2000-2002, which has been offset by a small recovery during the last three years. Distribution grew at less 2.5 percent over the past decade. In fact, only construction, transport, and financial services appear to have grown faster than population growth during the last decade.

6. The sectoral contribution to GDP growth during the past decade is presented in Annex 6A. As indicated above, agriculture is by far the most important contributor, followed by manufacturing, construction, transport and financial services.

7. In addition to being the largest productive sector of the economy, agriculture is by far the largest employer, accounting for 80 percent of employment. About 10 percent is employed in commerce and retailing, and the balance in manufacturing, construction and services. Hence, at least in the short- to medium-term, growth in the agricultural sector is a *sine qua non* to achieve broadly shared wealth creation in Malawi.

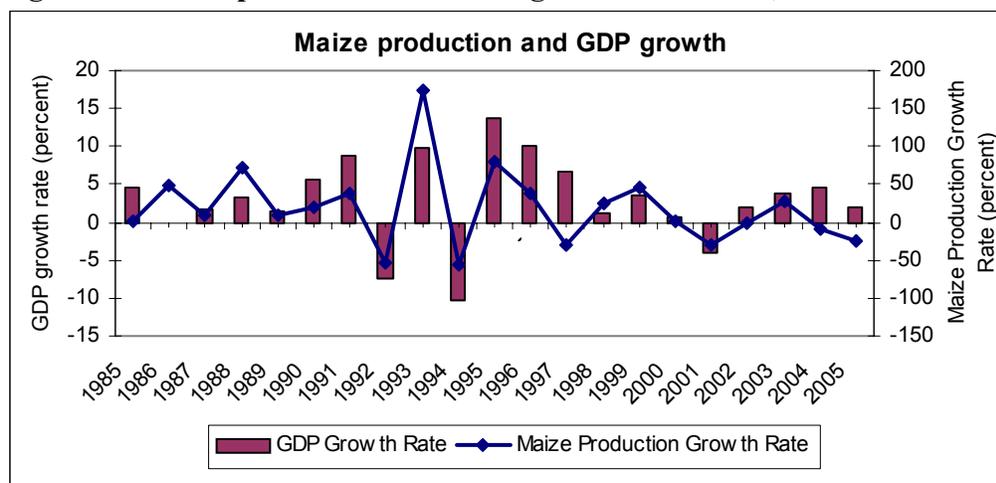
8. The pattern of sectoral growth and employment discussed above suggests that poverty may not have decreased much over the last decade. In terms of the distribution of growth, the larger share of employment in manufacturing and retailing in urban areas (about 46 percent, compared to 9 percent in rural areas), and the fact that these sectors have experienced a zero or even negative growth rates, suggest that poverty may have increased in urban areas.

9. Much of the poor performance has been the result of the recurrent weather shocks on smallholder agricultural production, notably maize production (Figure 6.2).¹⁰³ Weather shocks

¹⁰³ Malawi's economy is highly vulnerable to weather shocks not only because of the direct impact on agricultural production (and GDP), but also due to the indirect impact on government finances resulting from the unanticipated need for emergency interventions (which may translate into increased domestic borrowing), and increased pressure on the current account because of the need for exceptional food imports. Further, the long-term impact of the volatility is substantial, as economic uncertainty hampers the country's ability to generate and/or attract productive investments, to effectively compete in international markets, and, most important, to translate economic growth into employment and income generation that benefit those who need it most.

do not affect every household, depending on location. Hence, we should also expect significant movements in and out of poverty, depending on the location of the households, and the severity of the climatic shocks they have faced. Households which have been spared from the weather shocks are more likely to have improved their livelihood over the past decade.

Figure 6.2 Maize production and GDP growth in Malawi, 1984-2005



Source: National Statistical Office

10. Economic growth has also been significantly hampered by the impact of HIV/AIDS. As discussed in Chapter Five, the adult prevalence rate of HIV/AIDS in Malawi at the end of 2004 was estimated at 11.8 percent of Malawian adults age 15-49, corresponding to approximately 665,000 infections. The total number of orphans is currently estimated at around 1 million, of which only about half are thought to be directly due to HIV/AIDS. Studies on the evolution of the epidemic estimate that by 2010, the number of people with HIV/AIDS may reach 2 million. In addition, life expectancy is expected to drop further from 38 to 35 during the next ten years. Most studies estimate that GDP growth is adversely impacted in the region of 1-2 percent per year, through lower labor productivity, lower public and private savings, and reduced capital formation, as public expenditures are diverted to meet growing health demands (see Chapter Five). While the magnitude of the effect of the epidemic on GDP growth and per capita income differs in various studies depending on the model assumptions, there is strong consensus that the epidemic is having a significant adverse impact on poverty.

Changes in inflation since the early 1990s

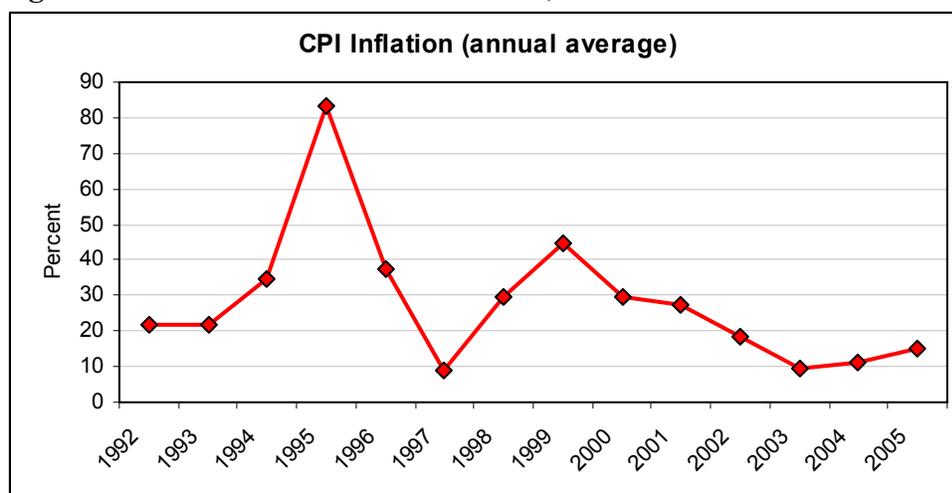
11. Malawi has experienced fairly high inflation with substantial volatility over the past decade (Figure 6.3). In addition to being affected by changes in the money supply and the exchange rate, Malawi's inflation rate is also influenced by changes in weather patterns (through their impact on domestic food prices) and international fuel prices.

12. Malawi's inflation rate increased from about 20 percent in 1992-1993, to a record high of 83 percent in 1995, as a result of several factors. First, the liberalization of the exchange rate system in February 1994 resulted in a huge depreciation of the kwacha, and the higher price of imported inputs quickly filtered through to domestic prices. Second, a large increase in the public

sector wage bill, together with unbudgeted expenditures on the 1993 referendum (for multiparty democracy) and the 1994 general election, led to a large increase in money supply. A combination of improved fiscal discipline, stabilization of the exchange rate, and favorable weather, allowed a reduction in inflation to 9 percent by 1997. However, renewed relaxation of the monetary policy (in the run up to the second multiparty general elections in 1999), saw inflation rising back to 45 percent by 1999. Inflation was subsequently brought under control, reaching 10 percent by 2003.

13. Most recently, inflation has started rising again, mainly as a result of increased financing of the monetization of the budget deficits (see below). The increase in money supply has been compounded by higher international energy prices, and the effect of the drought in 2005. As of end-2005, Malawi's inflation was 15.5 percent (above the corresponding average for Sub-Sahara Africa, at 9.9 percent, and for the SADC region, at 10.3 percent).

Figure 6.3: Movements in Inflation Rate, 1992-2005



Source: National Statistical Office

Interest Rates movements over the past decade

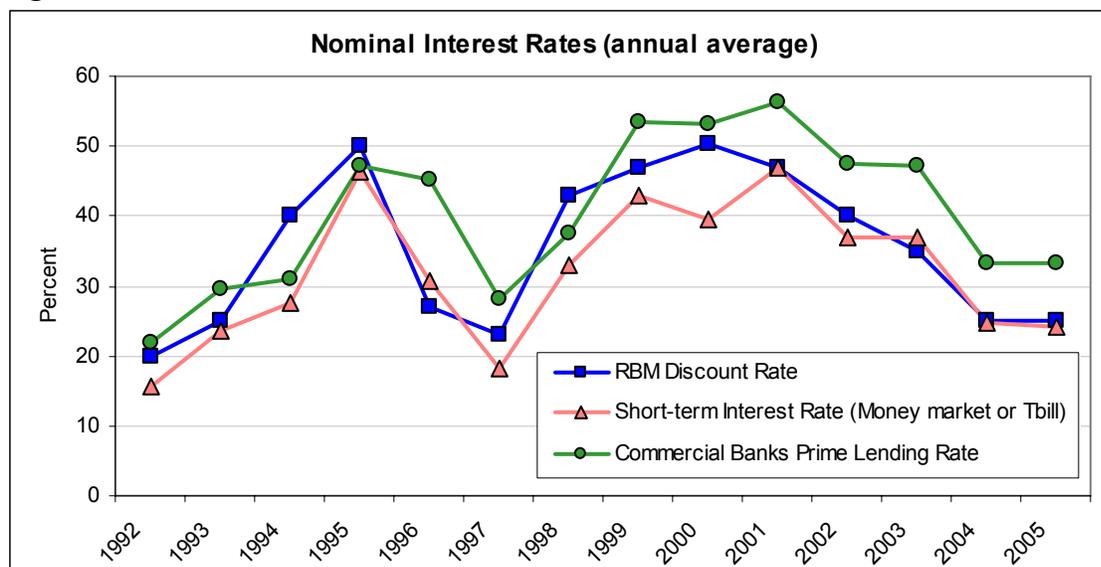
14. Interest rates in Malawi are market determined, with commercial banks largely free to set their own lending and deposit rates. The Reserve Bank of Malawi (RBM) sets the discount rate, which guides commercial banks and is also reflected in the interest rates for Treasury Bills. High interest rates in Malawi have generally been attributed to a combination of high levels of government borrowing (see below), high inflationary expectations, and the highly oligopolistic structure of the financial sector (World Bank 2004; Mlachila and Chirwa, 2002).

15. Figure 6.4 depicts the movements in nominal interest rates since 1992. The commercial banks' prime lending rate has generally been on an upward trend, reaching a record high at 56 percent in 2001. The lending rate has since been declining. This reduction mainly reflects the decrease in the discount rate by the RBM, from 45 percent in 2002 to 25 percent in 2004.

16. Interest rates have been extremely high during the past decade. During 2000 and 2004, the real interest rate has been above 20 percent, peaking at almost 40 percent in 2003. This is

one of the highest real interest rates in the world. Such high interest rates have effectively made it almost impossible for small farmers and business to borrow, with deleterious effects on economic growth (see below).

Figure 6.4: Movements in Interest Rate, 1992-2003



Note: The Prime Lending Rate is the interest rate charged by commercial banks to their most creditworthy customers (usually the most prominent and stable business customers). The rate is almost always the same amongst major banks.

Source: Reserve Bank of Malawi

Movements in the Exchange Rate

17. Prior to 1994, the exchange rate was relatively stable because it operated under a fixed system. The value of the Malawi Kwacha was pegged to a trade weighted-basket of seven currencies representing the geographical composition of Malawi's trade and the currencies used in settling the country's international transactions. However, as part of the structural adjustment reforms supported by the World Bank and the IMF, the exchange rate system was liberalized in 1994. In February 1994 the Kwacha was allowed to float freely against other currencies.

18. Immediately after the exchange rate was liberalized, the Kwacha plummeted, depreciating by about 290 percent against the US dollar within a period of 10 months. Fearing that the Kwacha would continue with the free fall, the authorities decided to change the system from a free float to a managed float. Under the new system, the Reserve Bank of Malawi (RBM) would deliberately sustain the value of the kwacha whenever it was felt that temporary excess demand for foreign exchange might lead to unnecessary fluctuations in the exchange rate. Over the past decade, the exchange rate has continued to depreciate steadily, with patches of stability in certain years (Figure 6.5).

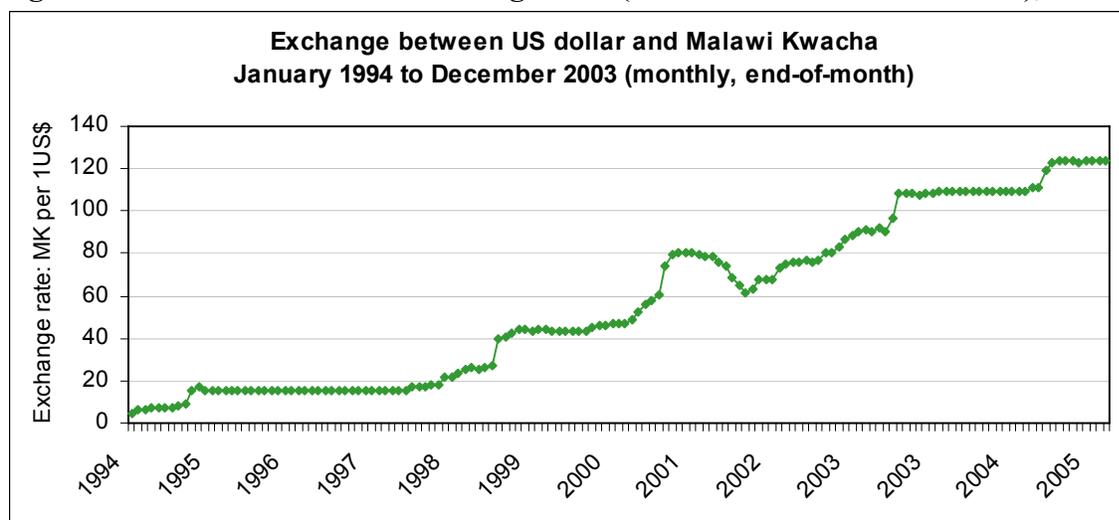
19. Movements in the exchange rate are closely linked to the performance of the tobacco sector (which account for almost 60 percent of Malawi's exports), and to the level of donor inflows. Malawi's currency is usually strongest during the April to September period when the

tobacco exports are concentrated. This period is generally associated with a stable exchange rate of the Malawi Kwacha vis-à-vis the US dollar, and an increase in official foreign reserves. On the other hand, the currency is usually under most pressure during October to March, when most of the agricultural inputs and food imports take place. Droughts have a significant impact on the exchange rate, as they exacerbate this seasonal trade pattern by reducing exports and increasing the need for food imports.

20. Donor assistance also has a significant impact on the exchange rate. Malawi receives substantial external assistance, amounting to around 17 percent of GDP on average over the past decade. However, the amount of assistance has varied substantially, with a low of 10 percent of GDP in fiscal year 2001/02, and a high of 25 percent in 2005/06. Hence, both the timing and amount of donors' disbursements also has an impact on the stability of the exchange rate.

21. Being an import dependent country, movements in the exchange rate have had far reaching effects on the economy. Notably, the poor have been affected by the increasing prices of fertilizers in domestic currency that has been reflected in a deterioration of the terms of trade for food production (maize, non-traded).

Figure 6.5: Movements in the Exchange Rate (Malawi Kwacha to US dollar), 1994-2005



Source: Reserve Bank of Malawi

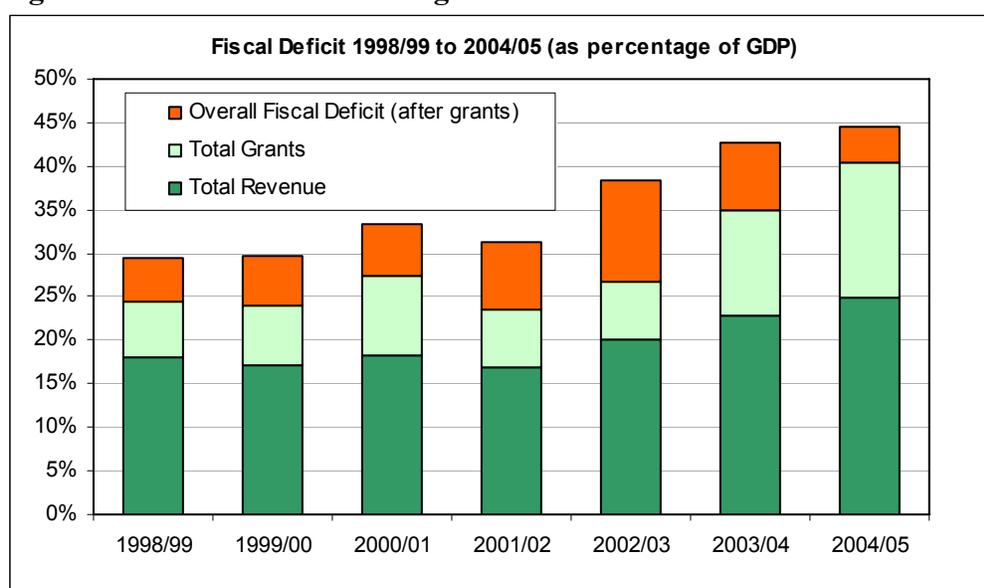
PUBLIC EXPENDITURES AND THE PROVISION OF SOCIAL SERVICES¹⁰⁴

22. For more than ten years the government has been spending significantly beyond its means. Figure 6.6 clearly illustrates recent trends. Total government expenditure (including donor-funded projects) increased from 29.5 percent of GDP in 1998/99, to 39 percent in 2002/03. While government revenue also increased from 18.1 percent to 20.2 percent of GDP over the period, it did not keep pace with the growth in expenditure. As a result, the fiscal deficit increased from 5.1 percent to 11.9 percent of GDP.

¹⁰⁴ This section draws on a paper by: Alan Whitworth (2005), *Malawi's Recent Fiscal Performance & Prospects*. Mimeo, DFID Malawi.

23. As shown in Figure 6.6, the fiscal situation deteriorated sharply in 2001/02 following the suspension of budget support. Despite the government's poor track record throughout the 1990s, following promises of improved fiscal discipline, the IMF agreed a Poverty Reduction & Growth Facility (PRGF) for Malawi in December 2000. At that time, Malawi also reached the HIPC 'decision point'. This means that the international community committed to forgiving a significant proportion of Malawi's external debt—on the clear understanding that Malawi maintain sound macroeconomic policies and redirect the funds that would have been spent on debt service to pro-poor uses. However, in November 2001 Malawi went 'off track' with the IMF PRGF, following continued over-spending and government failure to honor its promises. As a direct result, the donors suspended their budget support.

Figure 6.6 Fiscal Balance during 1998/99 to 2004/05



Source: Ministry of Finance and IMF

24. The government's response was to carry on spending almost as though nothing had happened, and to finance the gap left by the suspended aid with borrowing from domestic commercial banks and increased money creation. While some increase in the deficit may have been unavoidable in 2001/02 – since the suspension occurred in the middle of the financial year and expenditure cuts take time to implement – it is hard to justify the continuation of this practice throughout 2002/03.

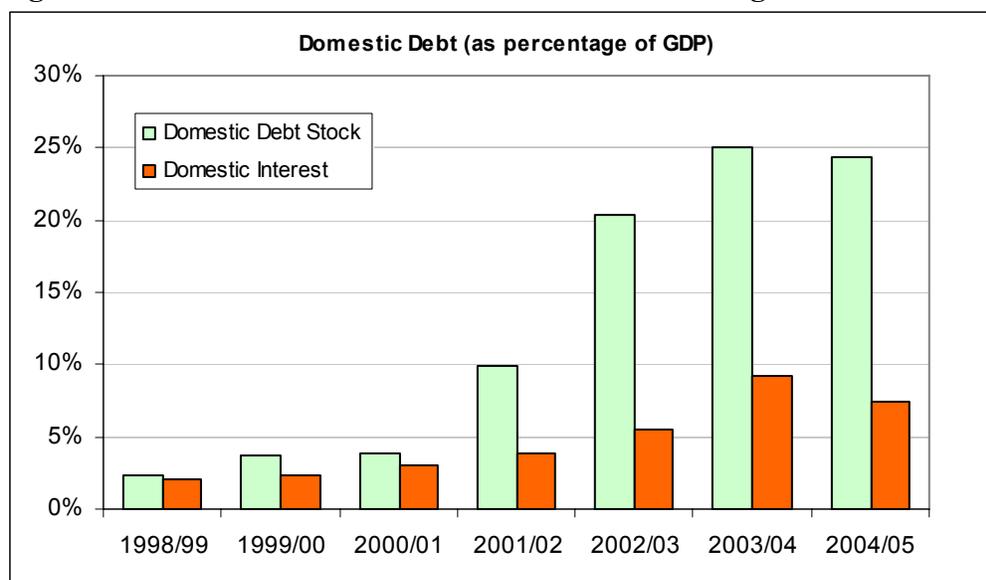
25. Further, the composition of these expenditures was not in line with the priorities in the MPRS. While government successfully protected Pro-Poor Expenditures (PPE),¹⁰⁵ on the other hand, an examination of those areas in which unbudgeted expenditure took place reveals a consistent pattern of over-expenditure on activities which are of little direct benefit to the poor, such as travel of civil servants, state residences, foreign affairs, defense, National Intelligence Bureau and Special Activities.

¹⁰⁵ Since 2000/01 the Government has designated certain budget lines as Pro-Poor Expenditure (PPE), which are protected in real terms and from within year budget cuts.

Impact of Government Borrowing

26. The inevitable result of the recourse to domestic borrowing was an explosion in government debt. This is illustrated in Figure 6.7, which shows an increase in the net domestic debt stock from 2.4 percent of GDP (MK 1.6 billion) in June 1999 to 25 percent of GDP (MK47.1 billion or about US\$ 450 million) in June 2004.

Figure 6.7 Domestic Debt Stock and Interest Bill during 1998/99 to 2004/05



Source: Ministry of Finance and IMF

27. The substitution of domestic borrowing for donor grants and soft loans has been disastrous for Malawi – both for government and the private sector. Government expenditure on interest obviously increased directly as a result of its increased borrowing. However, it increased more than proportionately to the debt stock. The dramatic increase in government borrowing from local banks pushed up interest rates – because there are only limited funds available. As a result, real interest rates exceeded 30 percent between 2001 and October 2003 – among the highest rates in the world.

28. The combination of the increased amount of debt and the jump in interest rates meant that government's domestic interest bill shot up from MK3.4 billion (3.0 percent of GDP) in 2000/01 to MK16.7 billion (9.2 percent) in 2003/04. The impact on the composition of the Budget is discussed below.

29. Increased interest rates do not just hurt government. Hardly any private firms can afford to borrow at 30 percent real interest rates—assuming they can access loans at all. As a result, private investment has been depressed; government has 'crowded out' the private sector. Direct investment in Malawi dropped from US\$59 million in 1999 to US\$6 million in 2002. Increased real interest rates will have been an important factor in this fall. This has obvious implications

for growth and employment, which are recognized in the recent Malawi Growth and Development Strategy.

Impact of Increased Debt on Expenditure

30. Figures 6.8 and 6.9 illustrate the impact of government borrowing on the composition of public expenditure, and in particular on ‘discretionary’ expenditures.¹⁰⁶ Despite the fact that total domestic expenditure increased by around 10 percent of GDP between 2000/01 and 2003/04, the discretionary balance did not increase as a percentage of GDP over the same period (Figure 8.8). In fact, as a percentage of total domestic expenditures, the discretionary balance shrunk from 52 percent in 2000/01 to 41 percent in 2003/04 (Figure 6.9). In other words, by 2003/04 at best, the government had control over just two-fifths of its budget.¹⁰⁷

31. Malawi was clearly on the verge of a fiscal and monetary crisis. The growth in debt and interest was so rapid that the Government was on the verge of falling into a ‘debt trap’, i.e., a situation where it is unable to prevent the debt / GDP ratio from continuing to increase until a default or rescheduling becomes inevitable. The origins of the crisis can be clearly seen in Figures 6.8 and 6.9. The fiscal deficits of the early 2000s led to an increase in domestic interest costs. The 2002/03 maize operation, and resulting fiscal debacle, compounded the already rising interest costs, leading to an explosion in domestic expenditure and the crowding out of discretionary expenditure.

32. Although government started borrowing on a large scale in 2001/02, the full effect of increased interest costs was not felt until 2003/04. The 2003/04 domestic interest bill reached MK16.7 billion (9.2 percent of GDP), corresponding to a massive 40 percent of domestic revenues.¹⁰⁸ This level was almost double the 2002/03 figure of MK7.5 billion (5.5 percent of GDP), or about 22 percent of domestic revenue.

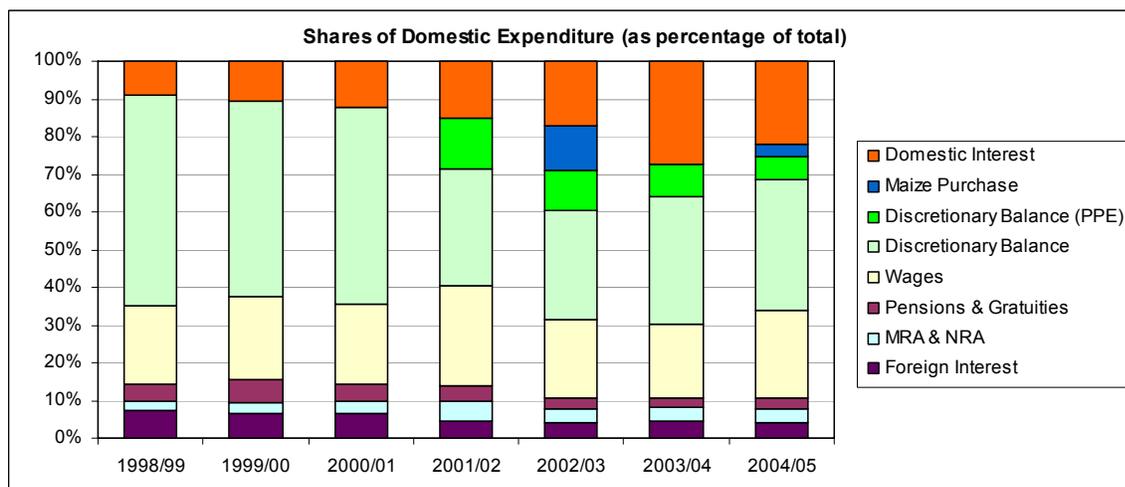
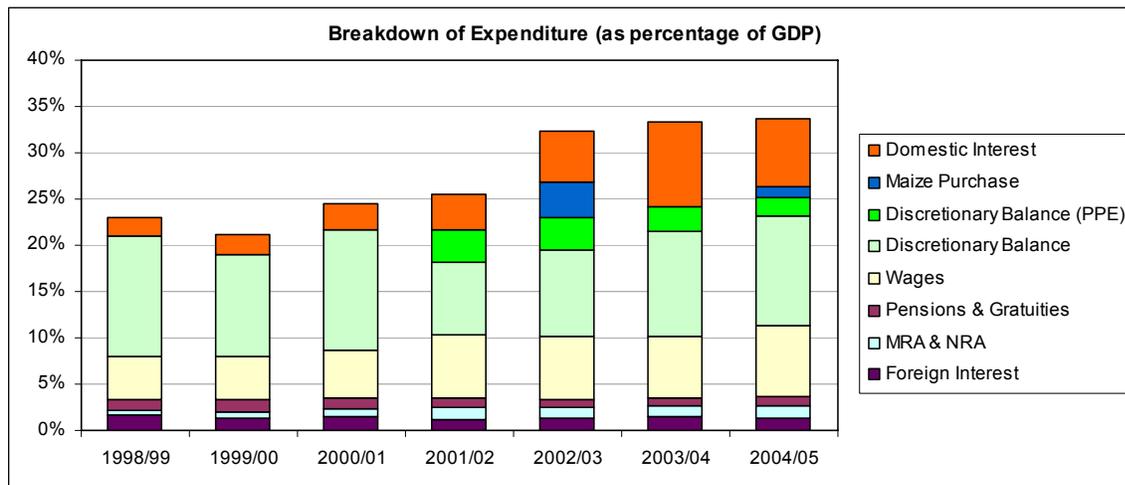
33. The breakdown between interest (plus the 2002/03 and 2004/05 maize operations) and all other expenditure on conventional government services, as a share of GDP, also shows that other expenditure has been relatively stable over the period (Figure 6.8). In other words, the increase in total expenditure since 1998/99 is largely attributable to growth in domestic debt, as a result of fiscal indiscipline, and the ensuing interest bill.

¹⁰⁶ Discretionary expenditure refers to the part of the Budget over which the Ministry of Finance can exercise a reasonable degree of control, i.e. that part which can in principle be allocated in accordance with policy priorities. There is no universally agreed definition of discretionary expenditure. It is usually defined as recurrent expenditures less statutory payments (domestic and foreign interest payments, pensions and gratuities, transfers to Malawi Revenue Authority and National Roads Authority). Here we also consider salaries and wages as part of the non-discretionary. In fact while wages are not statutory, and governments can reduce the number of their employees, in practice there is virtually no scope to cut wage expenditure in the short term. Retrenchment of public servants has a substantial short term cost in the form of retrenchment packages.

¹⁰⁷ The picture is even worse if we do not include PPE expenditures as part of discretionary spending. Since PPE are protected, the government is expected not to have any control over their funding.

¹⁰⁸ The total interest bill including foreign debt reached a staggering 10.7 percent of GDP, or around 32 percent of total domestic expenditure.

Figures 6.8 and 6.9: Major trends and composition of domestic expenditures in Malawi, 1998/99 to 2004/05

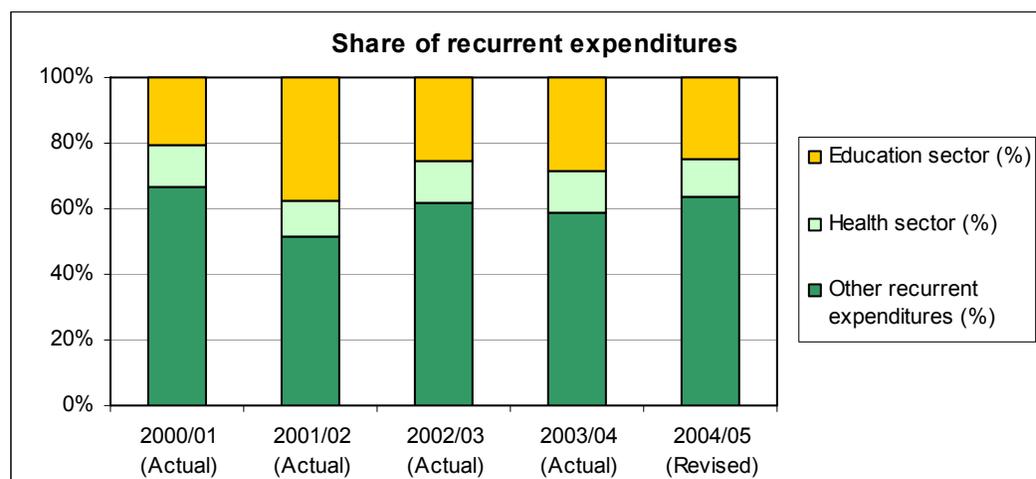


Source: Ministry of Finance and IMF

34. The interest payments on domestic debt are substantial and are affecting every sector, because they have shrunk the shares of discretionary budgetary resources available for other recurrent and development expenditures (such as in health, education, social safety nets, irrigation, and transport infrastructure). As an example, the shares of health and education in recurrent expenditures have decreased slightly in recent years (Figure 6.10).¹⁰⁹

¹⁰⁹ Although not shown above, the increase in government expenditure has been led mainly by an increase in recurrent expenditures over the period, while domestically financed development expenditures have not varied much.

Figure 6.10: Shares of Health and Education Sectors in Recurrent Expenditure 2000/01 to 2004/05



Source: Ministry of Finance and IMF

35. Since mid-2004, however, the new government that took office in May 2004 has taken rapid steps to stabilize the fiscal situation and pursue sustainable macroeconomic policies. The new administration has enforced strict fiscal discipline and, as a result, macroeconomic performance since June 2004 has been rapidly improving. The IMF and the government agreed on a Staff Monitored Program (SMP) starting from July 2004. Following strong performance in the implementation of the SMP, a new PRGF was approved in August 2005. The improved fiscal performance, combined with early receipt of donor budget support, provided for a gradual reduction in domestic debt stock to 24.5 percent of GDP in 2004/05. The domestic interest bill has also decreased slightly and is projected at about 7.5 percent of GDP in 2004/05 (or 30 percent of revenue).

36. The situation remains precarious, however, and the interest bill still constitutes a large burden on government resources. Malawi's level of domestic debt at the end of fiscal year 2004/05 is not as large as the corresponding ratios in some other countries. But with a small domestic capital market and the limited range of holders, it has the potential to increase rapidly, as a resumption of heavy borrowing would sustain real interest rates at high levels. Also, the country's vulnerability to external shocks can easily disrupt, or at least prolong, the adjustment period during which the country is paying an enormous interest burden.

CONCLUSIONS AND POLICY RECOMMENDATIONS

37. Economic growth has been elusive during the last decade and has been characterized by the impact of erratic weather patterns on agricultural production. In addition to the lackluster performance of agriculture, poor economic growth has been exacerbated by an even worse performance in manufacturing and distribution

38. Agriculture is the largest productive sector of the economy, accounting for 40 percent of GDP, and is also by far the largest employer, accounting for 80 percent of employment. Hence,

at least in the short to medium term, growth in the agricultural sector is a *sine qua non* to achieve broadly shared wealth creation in Malawi.

39. The pattern of sectoral growth and employment discussed above suggests that poverty may not have decreased much over the last decade. In terms of the distribution of growth, the larger share of employment in manufacturing and retailing in urban areas (about 46 percent, compared to 9 percent in rural areas), and the fact that these sectors have experienced a zero or even negative growth rates, suggests that poverty may have increased in urban areas. These conclusions are in line with the findings presented in Chapter One.

40. Much of the poor performance has been the result of the recurrent weather shocks on smallholder agricultural production. Weather shocks are not uniform in nature and therefore, it is reasonable to expect that substantial movements in and out of poverty have taken place over the past decade, depending on the distribution of climatic shocks.

41. The impact of erratic weather patterns has been compounded by the high volatility of inflation, and the very high (nominal and real) interest rates. Further, they have made credit prohibitively expensive for the poor, thus preventing them from lifting themselves out of poverty. All of these factors have also contributed to the poor economic performance and stagnating rates of poverty.

42. The high inflation and interest rates have largely been the result of very poor public expenditure management, especially since the year 2001. As a result of the previous government's failure to control expenditure, particularly since 2001/02, Malawi accumulated a dangerously large domestic debt stock virtually overnight. This threatens macroeconomic and financial stability and is crowding out other expenditures on social and economic services, and investment. Perhaps most seriously, with over 30 percent of government expenditure eaten up by interest payments there are insufficient resources to expand the provision of basic services and fighting poverty. The interest payments on domestic debt are substantial and are affecting every sector because they constrain the amount of discretionary budgetary resources available for expenditures in social and economic services.

43. As a result, the domestic debt is now a dominant feature of the Malawian economy and is hindering economic growth and poverty reduction. Addressing it has to be the immediate economic preoccupation of the government. The new government that took office in May 2004 is fully aware of the importance of this task, as reflected in President Bingu wa Mutharika's inauguration speech in May 2004: "*We have domestic debt that is clearly unsustainable and is eating through our resources thereby inhibiting growth. In order to get out of this poverty trap, we need to reduce public expenditure and domestic borrowing.*"

44. The new Government has taken rapid steps since June 2004 to stabilize the fiscal situation and pursue sustainable macroeconomic policies. The administration has enforced strict fiscal discipline and, as a result, macroeconomic performance since June 2004 has been rapidly improving. As an important first step, the government has begun to reestablish a good track record in macroeconomic performance. As a result, the IMF and the government have agreed on a new PRGF that was approved in August 2005.

45. The situation remains precarious, however, and the government needs to stay the course on its program of macroeconomic stabilization. Reduction of the domestic debt stock is a key priority in the fight against poverty. In fact, the reduction in the interest bill would release significant resources (almost 10 percent of GDP or 35 percent of Government budget) to reallocate towards growth and poverty reduction. A further reason in favor of a rapid adjustment is that the country's vulnerability to external shocks can easily disrupt, or at least prolong, the adjustment period during which the country is paying an enormous interest burden.

46. Readdressing the composition of public expenditures is also important. The reduction of interest payments on domestic debt will make available substantial budgetary resources for other recurrent and development expenditures (such as in health, education, social safety nets, irrigation, and transport infrastructure). The government therefore needs to prioritize how best to utilize these resources. The analysis in this chapter has indicated that smallholder agriculture has to be a key driver of economic growth and poverty reduction in Malawi. Chapter Seven therefore analyzes the challenges facing smallholder farmers in Malawi, and explores opportunities to expand productivity and profitability. The chapter also examines the effectiveness of government interventions in agriculture. The following chapters expand the discussion of government policies for economic growth and poverty reduction by examining the role of trade (Chapter Eight), the impact of public expenditure in social protection (Chapter Nine) and health and education (Chapter Ten) programs, respectively. Chapter Eleven looks at the role of monitoring and evaluation systems in ensuring that limited budgetary resources continue to be effectively spent and targeted towards the poor.

CHAPTER 7: AGRICULTURE GROWTH AND PRODUCTIVITY IN MALAWI

INTRODUCTION

1. Agriculture is the single most important sector of the Malawi economy, contributing almost 40 percent of GDP, employing 80 percent of the workforce, and contributing 90 percent of foreign exchange earnings in 2005. Further, agriculture is the main source of livelihood for the great majority of the poor and, therefore, it is critical to any strategy of broadly shared economic growth and poverty reduction. The lackluster performance of the sector over the past decade has been one of the reasons for the persistently high levels of poverty.

2. This chapter investigates the constraints to improving smallholder productivity and agricultural production. The analysis focuses on the smallholder sub-sector within agriculture, since it has the greatest relevance for poverty reduction.¹¹⁰ Further, the analysis focuses mainly on maize and burley tobacco, which are the most important crops for smallholders. Maize is by far the most common subsistence crop for small farmers in Malawi, while burley tobacco is the main smallholder cash crop and represents more than 50 percent the value of all smallholder crop sales.

3. The organization of the chapter is as follows. Following a brief overview of the agriculture sector in Malawi, the following section reviews the main characteristics of the agriculture sector, in terms of land distribution, cropping patterns, use of labor and fertilizer, access to credit and access to extension services. The third section examines yields, efficiency and the constraints to greater smallholder agricultural growth and productivity. The fourth section discusses agricultural marketing channels. The final section draws some conclusions and recommendations for government policy interventions in agriculture.

BRIEF OVERVIEW OF MALAWI'S AGRICULTURAL SECTOR

4. Malawi has a total land area of 9.4 million hectares, about half of which is suitable for agriculture. Most of the land, about 6.2 million ha, is divided amongst approximately 2.4 million smallholder households, under 'customary' rules of tenure (i.e., land allocated to them by village headmen and traditional authorities). An additional 1.2 million hectares is controlled by estates. Of this about 1.1 million ha belong to approximately 30,000 farmers under leasehold tenure created (over the last three to four decades) by Government allocations of customary lands into small and medium estates ranging in size from 10 ha to over 500 ha. A further 34,000 ha belong to large estates (mostly tea companies in the South, some local, some foreign) under freehold tenure granted during colonial times. Finally, there are about 1.8 million ha of public lands reserved for parks, urban areas and other purposes.

¹¹⁰ Also, the IHS2 household survey only includes a few estates in the sample, which is too small a sample to carry out analysis of the estate sub-sector.

5. Malawi's agricultural sector is thus characterized by a dual structure consisting of smallholder farms and estates (Box 7.1). As mentioned above, the estate sub-sector encompasses approximately 35,000 farms with a minimum size of 10 hectares that occupy leasehold or freehold land. The estate sector produces mainly tobacco, tea, sugar and coffee, almost entirely for export. The smallholder sub-sector comprises about 2.4 million farm families, cultivating around one hectare of land on average, largely with customary tenure rights. Although smallholder agriculture is mainly subsistence oriented, dominated by maize and other food crops, smallholders are now also contributing significantly to cash crop and export production in burley tobacco, where they now account for over 80 percent of total production, as well as cotton, tea, paprika, groundnuts and chilies.

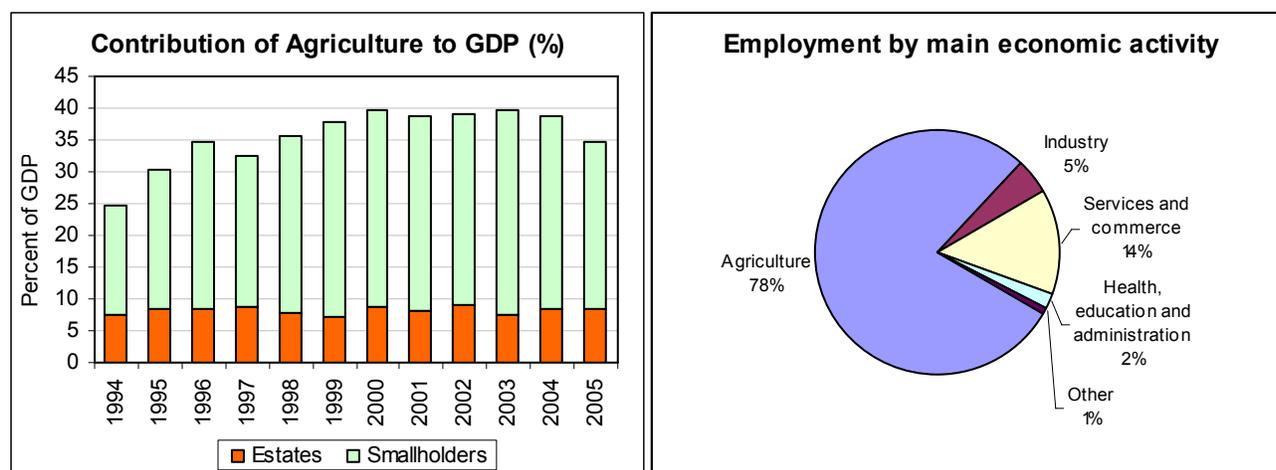
Table 7.1: Malawi land use in 1998 (million hectares)

Total Land and Water	11.8
Total Land Area	9.4
<i>Of which:</i>	
Public land	1.8
<i>Forest Reserves</i>	<i>0.8</i>
<i>Wildlife reserves</i>	<i>0.4</i>
<i>National Parks</i>	<i>0.6</i>
Customary land	6.2
<i>Cultivated customary land</i>	<i>2.4</i>
Estate land	1.1
<i>Cultivated estate land</i>	<i>0.6</i>
Urban land	0.3

Source: Estate and Public Land Utilization Studies, 1998

6. The contribution of the estate sub-sector to GDP has been stagnant at around 8 percent over the past decade, while the smallholder sub-sector has increased from under 20 percent in 1994 to around 30 percent by 2005 (Figure 7.1).¹¹¹

Figure 7.1: Contribution of the Agriculture Sector to GDP (1994-2005) and Employment (2003)



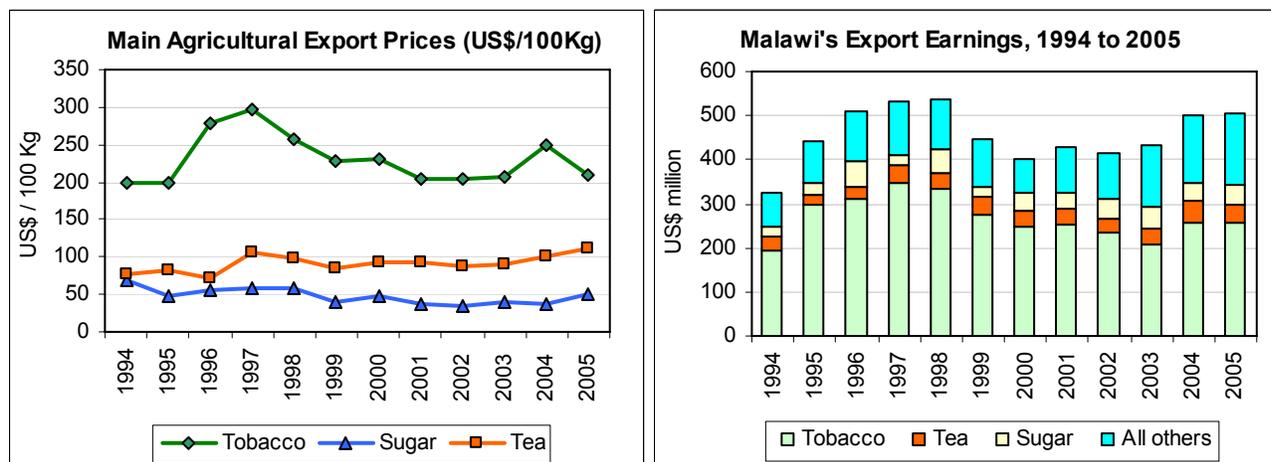
Source: Reserve Bank of Malawi and National Statistical Office

7. Malawi's exports are mainly agricultural products. Tobacco is by far Malawi's largest export, accounting for over 50 percent of total export earnings, followed by tea and sugar. The highest earnings for tobacco were observed 1997 at about US\$ 350 million (Figure 7.2). This growth was attributed to the rapid expansion of the smallholder burley tobacco production (see Box 7.1). However, after 1997, the export value of tobacco declined steadily to US\$200 million

¹¹¹ Note that the weak agricultural performance in 2005 is due to the drought which affected mainly the smallholder maize-producing sub-sector.

in 2003. The down ward trend has been credited to fluctuations in tobacco prices, which has also led to stagnation in output. Tobacco prices reached a peak in 1996 and 1997 with average prices of above US\$2.50 per kilogram, and have since declined substantially (Figure 7.2).

Figure 7.2: Malawi's main agricultural exports prices and earnings, 1994 to 2005



Source: Reserve Bank of Malawi

MAIN CHARACTERISTICS OF SMALLHOLDER AGRICULTURAL PRODUCTION IN MALAWI

Land availability and smallholders' access to land

8. Almost 90 percent of Malawian households have access to agricultural land (Table 7.2). Most of this land is rain-fed land; about a third of all households also have access to *dimba* land,¹¹² with greater access in the Centre, and less in the South. The poor are particularly dependent on agriculture. More than 95 percent of poor households have access to agricultural land.

Table 7.2: Share of households with access to land, by type of land, region and poverty status.

	ANY LAND			RAIN-FED			DIMBA		
	Non-Poor	Poor	Total	Non-Poor	Poor	Total	Non-Poor	Poor	Total
North	0.86	0.96	0.90	0.83	0.94	0.88	0.34	0.35	0.35
Centre	0.87	0.96	0.90	0.85	0.95	0.89	0.40	0.43	0.41
South	0.79	0.94	0.87	0.78	0.94	0.86	0.22	0.27	0.24
Total	0.84	0.95	0.89	0.82	0.94	0.87	0.31	0.33	0.32

Source: National Statistical Office, IHS2

¹¹² *Dimba* gardens are pieces of land which due to proximity to some source of water (river or stream) retain moisture for most of the year, and can therefore be cultivated during the dry season.

BOX 7.1: THE ORIGINS OF MALAWI'S DUAL AGRICULTURAL SECTOR

Malawi's agricultural sector is characterized by a dual structure consisting of smallholder farms and estates. This structure is the result of the history of expropriation of customary lands in order to establish large farms (as leasehold estates, freehold or state land). The estate sub-sector became the driving force of the economy during the colonial era and up until the early 1990s. The focus and source of economic growth during this period was commercial agriculture, led by medium-to-large scale estates, and centered on the production of tobacco, tea, and other crops for export. The estates were provided with preferential access to land, finance and labor. The conversion of customary land into private estates, normally targeted prime land leaving smallholders to work on the marginal unproductive land. Further, the reallocation of land towards estates was combined with the impact of other market distortions which favored large farmers at the expense of small farmers, for instance preventing smallholders from growing cash crops, or forcing them to sell their output to the government at artificially low prices. The bulk of the country's population was active as smallholder farm households, their primary functions being to feed the nation and to provide a ready and inexpensive pool of labor for the estates. Smallholder cash crop opportunities were officially constrained or the returns to these activities substantially reduced by inequitable pricing arrangements. As a result of these policies, during the early 1970s the estate sub-sector experienced a tremendous growth. During that time it contributed over 80 percent of the total agricultural exports, mainly from production of high value export crops (tobacco, sugar and tea). This dualistic economic structure resulted in growth but also a highly skewed distribution of income and opportunities for advancement. As a result, Malawi is today one of the poorest countries in the world since the benefits of economic growth went to very few people (DTIS, 2003).

The repeal of the Special Crops Act in the early 1990s gave smallholders the possibility to participate in the production of high-value export crops. This reform has led to a dramatic shift in the structure of agricultural production in Malawi, with a rapid growth in the relative importance of the smallholder sub-sector. Smallholders have rapidly diversified into high-value export crops. Although smallholder agriculture is still mainly subsistence oriented, dominated by maize and other food crops, smallholders are now also contributing significantly to cash crop and export production in burley tobacco, cotton, tea, paprika, groundnuts and chillis. Notably, smallholders have become the main producers of burley tobacco, and now accounts for around 70 percent of the total national production (and about 50 percent of Malawi's total exports). Most important, the liberalization of burley tobacco led to a substantial increase in net returns to smallholders, which translated into substantial rural poverty reduction in the mid-1990s (Jaffee 2004). On the other hand, the contribution of estate sub-sector to agricultural export earnings has sharply declined from 80 percent in the early 1990s to under 50 percent by 2005, mainly due to poor management and failure to compete with smallholders in tobacco burley production. However, the estates continue to dominate in the production of other high value crops such as tea, sugar, coffee and tree-nut crops (macadamia and cashews).

The experience of the 1990s has highlighted the great potential to foster development in Malawi through the smallholder sub-sector, provided that there is an enabling environment for the smallholders to operate efficiently through continued public institution reforms and ensure that they have access to credit, marketing and technology.

9. The average size of landholdings is very small across the entire (smallholder) population.¹¹³ On average households in Malawi have about 1.2 ha of land, about 1 ha of which is cultivated. Cultivated land is mostly rain-fed land (0.95 ha) and the balance is *dimba* (0.08 ha). Amongst smallholders, the distribution of landholdings is mostly concentrated between 0.2 and 2 hectares. About 30 percent of smallholders cultivate less than 0.5 ha, which includes about 4 percent who cultivate less than 0.2 ha (Table 7.3). A further 30 percent cultivates between 0.5 and 1 ha. A further 30 percent cultivates between 1 and 2 ha, and only 10 percent has access to more than 2 ha of land. The North region has larger landholdings, while the South has much higher population pressure. About 60 percent of the smallholders in the North region have more than 1 ha, compared to only 33 percent in the South. On the other hand, only 19 percent of smallholders cultivate less than 0.5 ha in the North region, compared to 34 percent in the South.

¹¹³ As indicated above, the IHS2 sample does not adequately account for large estates. Hence in the analysis we have removed the few observations related to large estates and have concentrated on the distribution of land holdings across smallholders and small estates.

10. The size of average landholdings increases with household wealth, but the relationship is not very strong. Land holdings in the bottom wealth quintile are 0.9 ha on average compared to 1.1 hectares on average in the richest quintile (Figure 7.3 and Annex 7A). The distribution of landholdings also does not change very much with wealth. The percentage of households with less than 0.2 ha is similar across all wealth quintiles. This reflects the fact that there are a large numbers of richer households for whom farming is only a marginal activity. Further, about 30 percent of the households in every wealth quintile cultivate between 0.5 and 1 hectare and the same percentage cultivate between 1 and 2 hectares (Table 7.3).

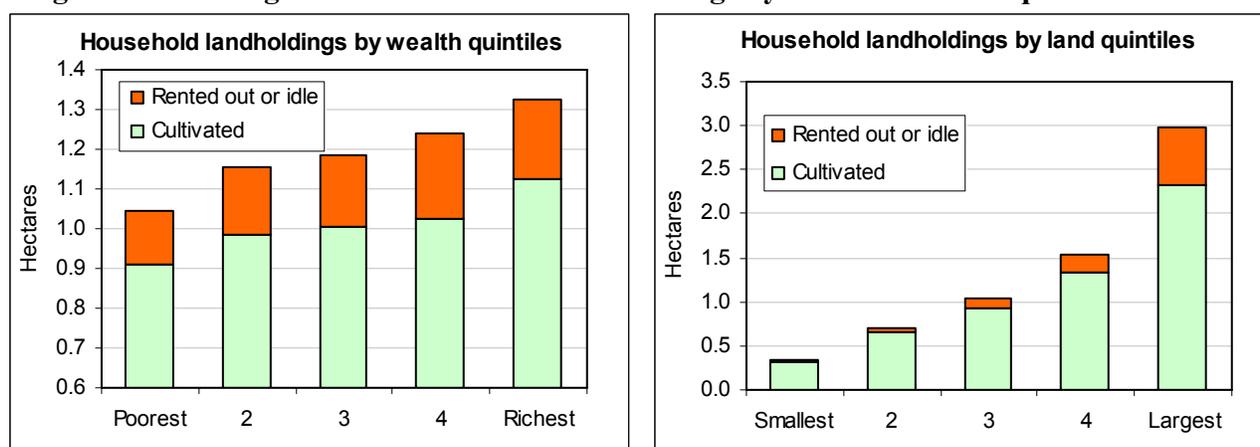
11. It is important to remember, however, that the poor also tend to have larger families. Hence, the relationship between wealth and land per capita is stronger. Smallholders in the poorest quintile have per capita land holding size of 0.17 hectares which increases to 0.53 hectares per capita for households in the richest quintile (Figure 7.3 and Annex 7A). These findings are consistent with the analysis of the determinants of poverty presented in Chapter Two that indicates that both access to land and household size play important roles in determining the extent of household wealth.

Table 7.3: Structure of landholdings by region, poverty status, and wealth quintiles (percent)

Size	Total distribution	Total cumulative distribution	Wealth quintile									
			North	Centre	South	Poor	Non-poor	1	2	3	4	5
0 ha	11.4	11.4	9.7	9.7	13.2	5.0	16.4	4.0	5.3	6.5	9.5	24.1
>0 - 0.2 ha	2.5	13.9	1.2	1.6	3.6	2.5	2.6	2.7	2.3	2.4	2.6	2.7
> 0.2 – 0.5 ha	17.4	31.3	10.9	13.8	21.8	18.9	16.2	21.0	18.1	17.8	17.0	15.0
> 0.5 – 1.0 ha	26.3	57.6	19.3	25.2	28.7	30.1	23.4	33.4	29.8	26.0	26.2	20.7
> 1.0 – 2.0 ha	29.0	86.6	30.1	33.5	24.9	31.6	26.9	28.9	31.6	33.8	30.2	23.1
> 2.0 ha	13.4	100	28.8	16.2	7.7	12.0	14.5	10.0	12.9	13.5	14.5	14.5
Total	100	-	100	100	100	100	100	100	100	100	100	100

Source: National Statistical Office, IHS2

Figure 7.3: Average size of households' landholdings by wealth and land quintiles



Note: Excludes landless households. For detailed numbers on the size of landholdings see Annex 7A.

Source: National Statistical Office, IHS2

12. Several other studies in Malawi have explored the importance of limited access to land as a determinant of poverty (NEC et al 2001; Mukherjee and Benson, 2003; Chirwa 2004). Chirwa examined the impact of increased access to land on the probability of moving out of poverty in Malawi using the IHS1 data and the Third Complementary Panel Survey (1998 and 2002, respectively). His findings confirm that access to land is an important variable in households' movement out of poverty. Access to land has both a direct impact on reducing the probability of being poor and an indirect impact through the increased cultivation of cash crops. The findings of Chirwa's study also emphasize that expanded access to land would need to be accompanied by complementary policies, such as promotion of land use, improving access to inputs, strengthening the provision of research and extension services, easing access to agricultural credit and to basic infrastructure, and improving market access.

13. Although household land holdings under customary land are very small, it has been estimated that one third of arable land in Malawi remains under-utilized. Notably, while the smallholder sector is faced with increasing land shortage, the estate sector is only utilizing about half of total area at their disposal. A 1998 study estimated that of the 1.1 million ha belonging to medium or large estates, only about 600,000 ha were under cultivation at the time. Hence, overcrowded arable land exists next to underutilized or idle lands, mostly belonging to medium and large estates or Government agencies.¹¹⁴ Further, this finding also highlights the highly unequal distribution of land in Malawi. Even if a significant part of the land left idle by estates would not be suitable for cultivation, this leaves a substantial area of agricultural land which could be transferred to poor landless or land-poor farmers through rental or sale, without having any impact on production of the existing commercial farms.

14. There are several reasons why a substantial numbers of large-scale farms are now idle or under-utilized.¹¹⁵ Given that ground rents on leasehold land are very low and poorly collected, estate lease holders have little incentive to rent out unused land, and instead may hold onto the land for speculative purposes. In addition, land owners are reluctant to rent out land to smallholders given the history of dispossession, which may lead to restitution claims and difficulties ending rental contracts. As a result, failing estates are often surrounded by land-starved neighboring communities, which sometimes leads to encroachment.

15. The limited access to land in Malawi raises two related questions. Firstly, whether such small farms represent viable production units to efficiently contribute to national wealth creation and poverty reduction. Secondly, whether such small areas of land per capita provide an

¹¹⁴ This observation highlights the fact that the overall distribution of land in Malawi is sharply unequal, in the sense that a small minority enjoys access to enormous farms, while the vast majority of the population lives off tiny plots.

¹¹⁵ This phenomenon is partly the result of the so called "estate crisis". The removal in the early 1990s of the laws preventing smallholder farmers from growing profitable cash crops, notably tobacco, led to a rapid intensification of agricultural production in smallholders plots in the mid-1990s. At the same time, this process also brought about a dramatic reduction in the production of estates. In fact, smallholders now found it more profitable to grow their own cash crops rather than providing (very cheap) labor to the estates. The sudden scarcity of cheap labor (that had been previously been artificially abundant as a result of government policies) highlighted the deep structural inefficiencies of the estate agricultural sector in Malawi and led to the collapse of several unprofitable, poorly-managed estates, mostly in tobacco production.

adequate basis to enable households to reach food security and move out of poverty. Both these questions will be examined in the section on farm efficiency and productivity.

16. Here we only highlight that small farm sizes are not unique to Malawi and also characterize agriculture in Asia. Today in most countries of Asia, the average landholding ranges from only 1 to 2 hectares (Fan and Chan-Kang, 2003), that is fairly similar to Malawi. Average farm size in Korea and Japan were around 1.5 hectares per farm as of 2002. Average land holdings in India are approximately 1.55 hectares per farm in 1991. Further, approximately 74 percent of all landholdings in India were smaller than 1 hectare in 1991. Similarly, in China, average landholdings per farm were only 0.40 hectares in 1999.

17. In fact, counter to commonly held beliefs, there is ample international evidence to suggest that, small-scale farmers can play a powerful role for food security, economic growth and poverty reduction. Empirical research often highlights that “small is beautiful”, which is based on empirical observation that small farms present higher land productivity than large farms, because of the intensive use of the land by labor-abundant households (see amongst others, Sen 1962; Feder 1985).¹¹⁶ As will be discussed below, the analysis carried out in this chapter supports the existence of an ‘inverse relationship’ between farm size and productivity in Malawi.¹¹⁷ This finding implies that smaller farms are using their variable resources more efficiently than the bigger farms, yielding higher output per hectare. The existence of such an ‘inverse relationship’ has powerful implications for land policy as it entails that land reform that reduces the inequality in land holdings will have a positive effect on productivity.

Crops grown by smallholders

18. The dominant food staple crop in Malawi is maize which is grown by about 97 percent of the agricultural households independently of region, poverty status, land size or expenditure quintile (Table 7.4). Other food crops are also widely planted; 68 percent of agricultural households planted pulses, primarily groundnuts, beans and pigeon peas. Over a third (36 percent) of all agricultural households produced some form of roots, primarily cassava and sweet potatoes, and a third produced some type of vegetables.

¹¹⁶ The debate on the existence of an ‘inverse relationship’ and the factors causing it remains the topic of a hotly debated research agenda, and the evidence does not always support it (see amongst others, Deolalikar 1981; Subbarao, 1982; Bhalla and Roy, 1988). There is a consensus, however, that empirical evidence does not support the claim that larger farm sizes are necessarily more efficient than smaller units. In general, the relationship between farm size and productivity appears to depend on a number of factors including the difference between the intensity of land use, land fertility, and managerial factors, as well as the extent to which credit and input markets are functioning.

¹¹⁷ This finding also highlights the importance of demographic pressure, which leads to increased subdivision of customary lands. With the fragmentation of land holdings, the average size of farms fell in the country, while the number of small and micro-holdings has increased significantly. Given the population growth rate of about 2 percent (see Chapter Two), per capita land holding size will continue to decrease rapidly over time. The situation is particularly critical in the South region, where the rural population density is among the highest in Africa.

Table 7.4: Percentage of households cultivating different crops, by poverty status and land and expenditure quintiles

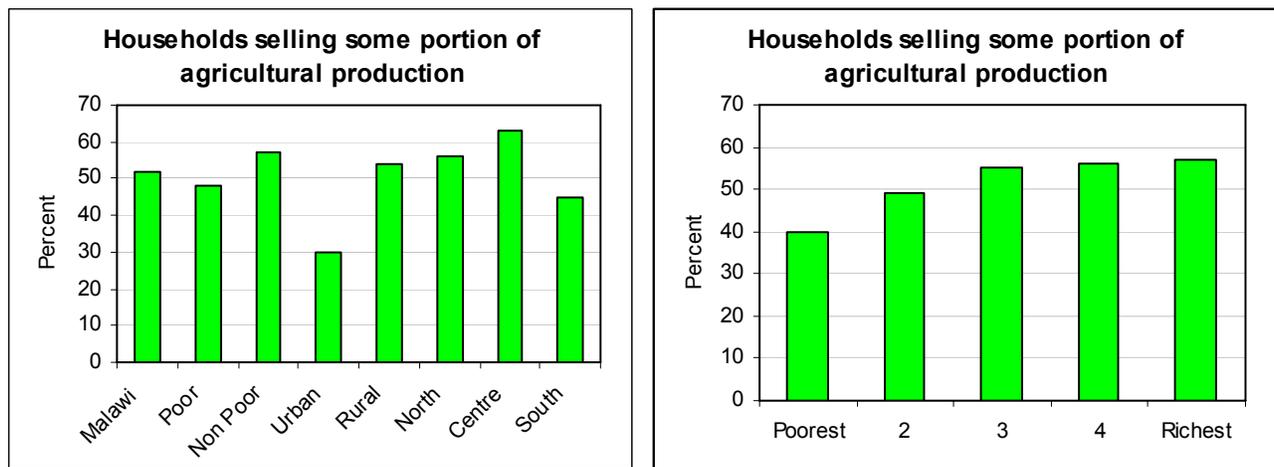
	Non-Poor		land quintile					expenditure quintile							
	Total	Poor	North	Centre	South	1	2	3	4	5	1	2	3	4	5
	Maize	97	97	98	93	97	99	93	97	97	98	99	98	97	98	97
<i>Local Maize</i>	56	53	60	38	55	62	43	55	59	59	58	61	59	58	50
<i>Composite Maize</i>	7	6	7	5	6	7	4	6	6	7	9	7	7	7	6
<i>Hybrid Maize</i>	58	61	55	67	59	55	53	51	57	62	66	53	56	56	64
Other cereals	24	22	26	19	14	33	15	21	25	26	27	26	26	25	19
Roots	36	38	35	62	35	32	25	26	34	42	51	31	37	39	35
<i>Cassava</i>	21	20	22	45	11	24	13	17	19	23	28	19	24	23	18
Pulses	68	69	67	58	70	69	46	58	68	76	82	64	69	69	67
<i>Groundnut</i>	38	42	34	41	53	25	17	25	38	47	57	26	37	39	43
<i>Bean</i>	23	26	21	31	34	13	17	17	20	28	33	17	21	24	27
<i>Pigeon pea</i>	27	23	31	2	3	54	20	30	28	27	25	33	31	28	20
Tobacco	15	18	13	21	25	6	2	5	13	20	32	11	13	15	19
<i>Burley Tobacco</i>	14	16	12	18	23	5	1	5	11	19	29	10	12	14	18
Cotton	3	3	3	2	3	4	0	1	2	5	5	3	4	3	2
Sugar	5	6	5	7	7	4	2	3	4	7	11	3	6	5	6
Vegetables	36	39	33	35	40	33	25	26	35	43	48	30	34	39	38

Source: National Statistical Office, IHS2

19. In general there is very little differentiation in cropping patterns of food crops by wealth status. Only among pulses are significant differences evident. Across expenditure quintiles, an increasingly greater share of producers plant groundnuts and beans. Conversely, an increasingly smaller share of pigeon peas is grown as wealth increases. More differences emerge when we look at cropping patterns by size of landholding. A greater share of households grows every type of crop, with the exception of pigeon peas, as land holdings increases. This is an indication of increasing diversity of crop choice as households have larger areas of land with which to produce.

20. As discussed in Chapter Three, the majority of the smallholders in Malawi cultivate for subsistence and they only sell the surplus to the market.¹¹⁸ Most production does not reach the market and is used for home production. Only half (52 percent) of all agricultural producers sold some portion of their output on the market (Figure 7.4). A higher share of non poor agricultural households (57 percent) compared to poor households (48 percent) participated in the market, a trend particularly evident across the wealth quintiles. A higher share of agricultural households in the Centre (63 percent) and North (56 percent) participated in markets, as compared to the South (45 percent). A higher share of producers with access to *dimba* made it to market (54 percent) compared to rain-fed (44 percent—not shown).

Figure 7.4: Percentage of households selling some portion of agricultural production, by status, location and wealth quintile



Source: National Statistical Office, IHS2

21. With exception to cash crops such as tobacco and cotton, which are wholly grown for sale, nearly all food crops are produced for subsistence. Over half of all producers of food crops sold at least one food crop during the survey period (Table 7.5). With only 18 percent of households, maize was the least often sold of the major food crops. Sales of food crops were more common in the Centre (60 percent of households) and least common in the South. The poor were less likely to sell any type of crop, and households with increasingly greater landholdings showed a higher share of market participation.

¹¹⁸ Gabre-Madhin et al (2001) report that only 18 percent of the farm households sell more than half their output highlighting the fact that farms in Malawi produce mainly for home consumption.

Table 7.5: Percentage of households selling each type of food crop group*

	Total	North	Centre	South	Non-Poor	Poor	land quintile				
							1	2	3	4	5
Maize	18	21	21	14	22	13	7	11	17	21	29
Cereals	26	54	36	18	29	23	17	25	23	29	26
Roots	32	25	41	28	37	27	23	24	33	34	38
Pulses	37	36	52	24	40	33	18	25	36	42	48
Vegetables	38	41	45	30	40	36	24	25	36	41	49
Food crop**	51	54	60	41	55	46	26	35	52	61	69

Notes: * Percentage shares calculated only over producers of each crop.

** This category includes all households selling at least one of the crops listed in the first column.

Source: National Statistical Office, IHS2

The decision to cultivate hybrid vs local maize varieties

22. The IHS2 data indicate that the proportion of smallholder farmers cultivating hybrid maize is now larger than those cultivating local varieties (Table 7.4). However, there are differences across the income distribution, as poorer households are more likely to grow local maize, while wealthier households tend to plant hybrid varieties. As landholdings increase along land quintiles, the share of both types of varieties increases, though with greater use of hybrids among the larger landholding categories. Further, there were also observed differences between households when compared by region. Households in the Centre and South are more likely to grow local varieties, while a higher share of households in the North grow hybrid varieties.

23. While the proportion of farmers growing hybrid has been increasing over time, it is unclear why most farmers are still producing lower-yielding local maize varieties. The decision to grow hybrid maize (and the adoption of other ‘technological innovations’, such as high-yielding varieties and fertilizer) has been investigated extensively in the academic research in order to understand the constraints preventing smallholders from using these profitable technologies (Feder et al 1985; Besley and Case, 1994; Foster and Rosenzweig, 1995; Conley and Udry, 2004). Feder et al (1985) conducted a comprehensive international literature review on adoption of agricultural innovations. They list factors that have frequently been identified as being influential in determining the adoption of an agricultural innovation in many countries. These include (i) farm size, (ii) risk exposure and capacity to bear risk, (iii) human capital, (iv) labor availability, (v) credit constraints, (vi) tenure, (vii) access to commodity markets.

24. Zeller, Diagne and Mataya (1997) explored the applicability of these factors in Malawi’s specific context. Their econometric analysis of a sample of 400 rural households in five districts of Malawi found that households with small farm sizes and low risk-bearing ability are able to adopt intensive crops, such as hybrid maize and tobacco, if policies improve their access to credit, extension, input and output markets. Participation in agricultural credit program has been found to substantially raise the cropping share for hybrid maize and tobacco, and has had a sizeable effect on crop income. They also found that participation in agricultural credit programs was found to be lower for households that live in areas with higher variation in households, possibly because agricultural credit programs tend to shy away from such areas because of

higher expected loan default. Further, they also found that access to agricultural markets and related improvements in rural infrastructure and marketing institutions are essential for adoption of new technologies.

25. Several other studies also found that, in addition to limited access to credit, farmer adoption decisions of hybrid maize is determined by a combination of risk-aversion and safety first behaviour. Farmers who seek to avoid downside risk to grow only local varieties even though hybrid maize is more profitable in the higher returns range. Further, given the unreliability of markets to deliver maize of the local variety (that is preferred for food consumption and is more resistant to insects in on-farm storage) farmers choose to produce sufficient quantities of local maize to meet subsistence needs (Smale and Heisey, 1993; Smale et al 1994; Smale et al 1995).

The decision to cultivate tobacco or other cash crops

26. Tobacco production remains the most important cash crop for smallholders, at all levels of wealth. The IHS2 data indicate that overall about 15 percent agricultural households grow tobacco, equivalent to about 350,000 households. This includes about 13 percent of poor smallholders and 18 percent of non-poor smallholders. Tobacco production is particularly important in the North and Central regions, while few households grow tobacco in the South. Tobacco is grown by a significant number of farmers in every expenditure quintile. However, the proportion of smallholders growing tobacco increases with wealth. About 11 percent of smallholders from the poorest quintile grow burley, compared to 18 percent of smallholders in the richest quintile. Land appears to be an important determinant of the decision to grow tobacco. Only about 2 percent of farmers from the bottom land quintile cultivate tobacco, compared to 32 percent from the top land quintile.

27. The other main cash crop grown by smallholders is cotton grown by approximately 3 percent of smallholders, mainly in the South region. As in the case of tobacco, the percentage of farmers growing cotton remains similar across wealth quintiles but increases rapidly by land quintile. Sugar is also grown by approximately 5 percent of smallholders, mainly in the Center and the North regions. However, sugar is not a cash crop for most smallholders. All sugar produced for export from Malawi is produced on few industrial sugar cane plantations, while sugar cane grown by smallholders is primarily for local snacking.

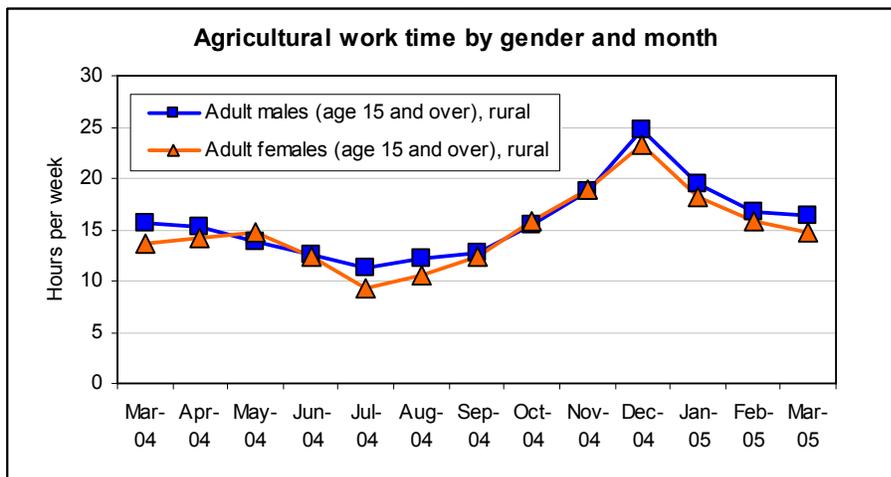
28. Major export crops such as burley tobacco, sugar and cotton are usually considered high-yield crops because they are more profitable than subsistence activities (like production for home consumption). Hence, we expect households engaged in export markets to be less likely to be poor than households restrained in subsistence agriculture. If it is true, however, that export commodities are more profitable than subsistence activities, then promoting entry into export market sounds like a plausible policy recommendation, especially in terms of poverty reduction. In addition, observing higher returns in export agriculture raises the question of why farmers are not switching production activities into the more profitable ones. These issues are not discussed in this chapter but will be the subject of the Chapter Eight, which explores the potential of using trade in agricultural commodities as a mechanism for poverty alleviation.

Labor use in smallholders' agricultural production

Household labor use in agriculture

29. The IHS2 data do not allow us to measure the amount of family labor used in agricultural production by the individual households. However, the data allow us to examine the aggregate patterns in use of labor from within the family. As discussed in Chapter Two, the IHS2 data suggests the existence of labor shortages at the peak of the cropping season, with negative impacts on the ability of households to make the most of their endowments such as land. At the same time, for most of the year, there is substantial underemployment, especially in rural areas. It could therefore be argued that seasonality in the demand for labor is leading to both underemployment and labor shortages (see Chapter Two, Box 2.5). For most of the year, household members have extra time available to undertake productive ventures, but many do not because of the limited opportunities available to them. At the peak of the cropping season, around December-January, the demands in the agriculture sector make it difficult to find the labor necessary to perform all the work that has to be done (Figure 7.5).

Figure 7.5: Agricultural work by gender and month



Source: National Statistical Office, IHS2

30. The importance of seasonality in the allocation of rural farm labor in Malawi is relatively well documented. For example, Kamanga (2002) provides seasonal cropping and labor calendars for two villages. As explained by Brummett (2002), the fact that labor is scarce at some periods of the year has implications for the ability of farmers to diversify and enter in new activities. A large sample study for Malawi by Tango International (2003) based on a household survey conducted in 2003-2004 with data on 2030 households identified the scarcity of labor as an important constraint to the development of rural farming. The most common reason cited by households for not cultivating all of their land was a lack of inputs such as fertilizer and pesticides (cited by 63 percent of households). This was followed by the lack of labor (45 percent), and the lack of seeds (21 percent). Other reasons cited for not cultivating all the land available were the lack of rainfall (5 percent), the need to leave land as fallow in order to conserve soil fertility (3 percent), and other reasons (14 percent). When combined with an analysis of the level of vulnerability of the households in the sample, it appeared that more

vulnerable households were more likely to cite the lack of labor as the main constraint to farming all their available land.

31. Another interesting finding from the Tango International study relates to the relationship between labor availability and food security. Households were asked why their food stock expectations had decreased for the current harvest as compared to a normal harvest, which led to a lack of food for many. Most households associated the insufficient availability of food to a lack of inputs, an issue likely to be related to the recent reduction in input subsidies provided by the government (i.e. Starter Packs which contains, among other items, fertilizer). The impacts of droughts and “other reasons” came in as the second and third most important reasons for a lack of sufficient food. The lack of labor ranked fourth, before the lack of land, poor soils, not enough seeds, and draught power. There are signs that the problems of a lack of labor is being exacerbated by the HIV/AIDS crisis. Apart from the direct impact of death itself, caring for the sick, and burying the dead has led to a reduction in the time available for productive activities (Shah et al., 2001).¹¹⁹

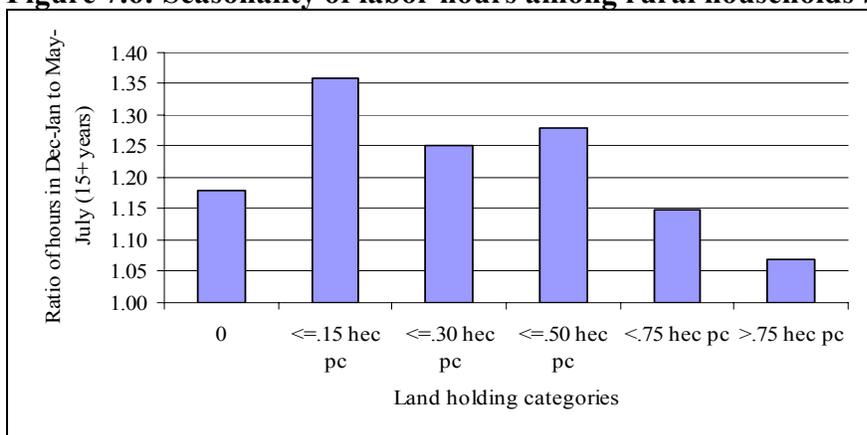
32. Using the IHS2 data we analyze the labor patterns of rural households, we examined the extent to which land holdings per adult are associated with seasonal labor constraints. The indicator of the seasonality of labor is the ratio of mean adult hours in the peak months (December-January) to the surplus months (May-July). This is a crude measure, as peak and surplus months will vary across regions. Nonetheless, even with this imprecise measure we find evidence that seasonality affects small land holders the most. Figure 7.6 shows that seasonal labor issues are most pronounced for the smaller holders with less than 0.15 hectares of land per adult. Among these small land holding households, mean hours in December-January are more than 35 percent higher than the corresponding measure during the surplus labor season. For other land categories, including households with no land holdings and those with large holdings, we also see seasonality. For landless households, this will reflect land demand for *ganyu*¹²⁰ workers during planting seasons. In turn, it is the larger land holders who hire such labor¹²¹, which explains the lower ratio of peak-to-surplus season hours for the large holders.

¹¹⁹ In contrast, in labor surplus areas, on average there may be no observable impact of a prime-age death on the labor supply of surviving household members, as suggested in a study of northwest Tanzania by Beegle (2005).

¹²⁰ *Ganyu* refers to short-term, temporary rural daily labor.

¹²¹ While the prevalence of hiring labor at least for one day on rain-fed plots is even across the land categories in Figure 2, the intensity of such labor is not even. The number of days of hired labor increases significantly as land holdings increase.

Figure 7.6: Seasonality of labor hours among rural households by land holdings

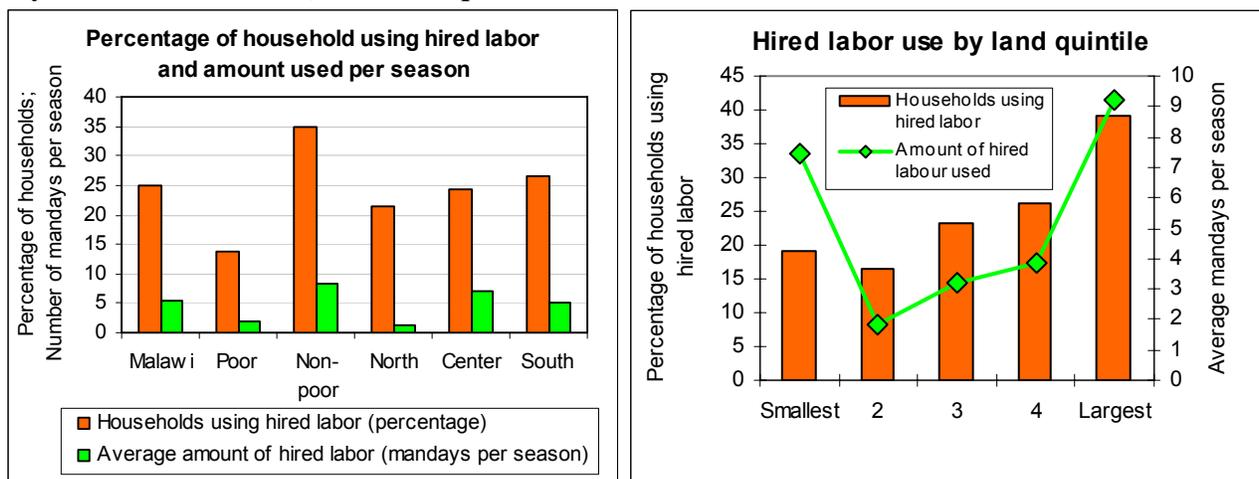


Source: National Statistical Office, IHS2

Use of hired labor in smallholder agricultural production

33. Use of hired labor is fairly low in Malawi (Figure 7.7). While a large percentage of households hire casual labor (*ganyu*) in the course of the season, the amount used is relatively little. For comparison, while the amount of family labor used in agricultural production averages around 45 hours per week (depending on the month and specific household composition), *ganyu* labor only averages around 1 hour per week. This is not entirely surprising given that the average size of landholdings per capita is not very large, and that the distribution of land across smallholders is fairly similar. More important, most of the casual labor is required in estates, which are not included in our sample. There is little difference in regional shares of households using hired labor, but the amount of mandays used is substantially larger in the Central region and the South region. Possibly this is a combination of higher supply of labor in these regions, given the small land holdings per capita. The most significant difference is between poor and non-poor households, which also contributes to the higher use of labor in the central region.

Figure 7.7: Household use of hired labor (percentage) and amount (man days per season), by status and location, and land quintile



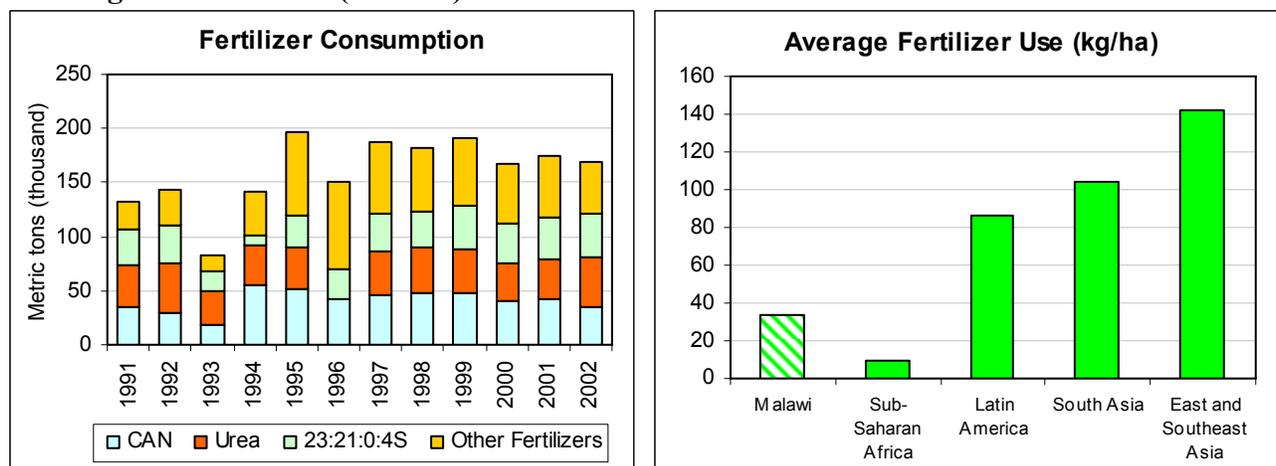
Source: National Statistical Office, IHS2

34. The percentage of smallholders hiring labor at least for one day increases across wealth quintiles, and the number of days of hired labor also increases significantly (Figure 7.7). The limited use of *ganyu* labor presumably also reflects the seasonal nature of labor demand, whereby all labor is fully employed at peak season, while there is substantial underemployment during the surplus labor season.

Smallholder Fertilizer use

35. According to IHS2 data, smallholder fertilizer consumption in Malawi is low at approximately 34 kg per hectare on average.¹²² This level of fertilizer consumption is higher the Sub-Saharan average of 9 kg/ha, but remains well below other regions of the world, with approximately 86 kg/ha in Latin America, 104 kg/ha in South Asia, and 142 kg/ha in Southeast Asia (FAO data cited in Crawford et al, 2005; see also, Jayne et al, 2003). Further, despite the increase in the area under cultivation, there has been stagnation or to some extent a decline in national fertilizer consumption over the past decade. Total fertilizer use has declined, from 176,000 MT in 1996 to less than 169,000 MT in 2005 (Figure 7.8).

Figure 7.8: Malawi National Fertilizer Consumption (1991 to 2002) and International Average Fertilizer Use (2004/05)



Note: Average fertilizer use if defined as kilograms of fertilizer nutrients per hectare of arable land.

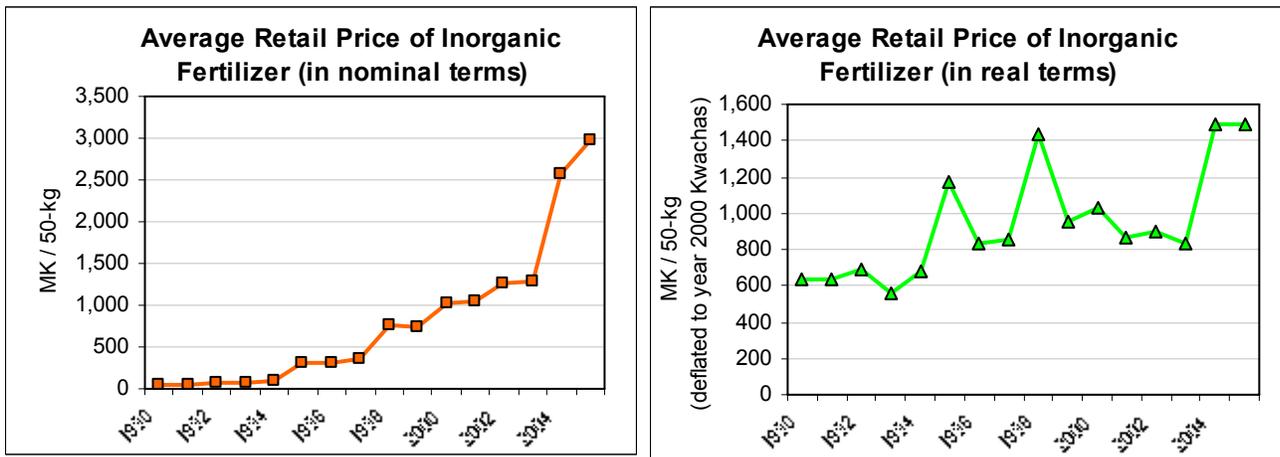
Source: IFDC (national fertilizer consumption), FAO (regional averages of fertilizer use), IHS2 (Malawi average fertilizer use)

36. The real prices of agricultural inputs especially inorganic fertilizer has increased almost two-fold between 1990 and 2005, almost entirely driven by increases in world prices (Figure 7.9). The increase in fertilizer prices has caused reduction in demand for fertilizer since most farmers especially the poor could not afford. Fertilizer prices in Malawi are substantially higher than world prices and also higher than prices within the region (World Bank 2004). This is largely because of the fact that Malawi is land locked (which entails higher transport costs), but is also due to high finance charges, limited competition, and high exchange rate risks.

¹²² Estates have much higher fertilizer consumption in excess of 150 kg/ha

37. Smallholders account for about two thirds of total national fertilizer consumption (but about four fifths of the cultivated land—see above). According to IHS2 data, almost 70 percent of smallholders use some form of fertilizer, without significant variations across regions. However, only 45 percent of smallholders use own purchased fertilizer, whereas 25 percent solely depend on fertilizers from safety nets for their production.

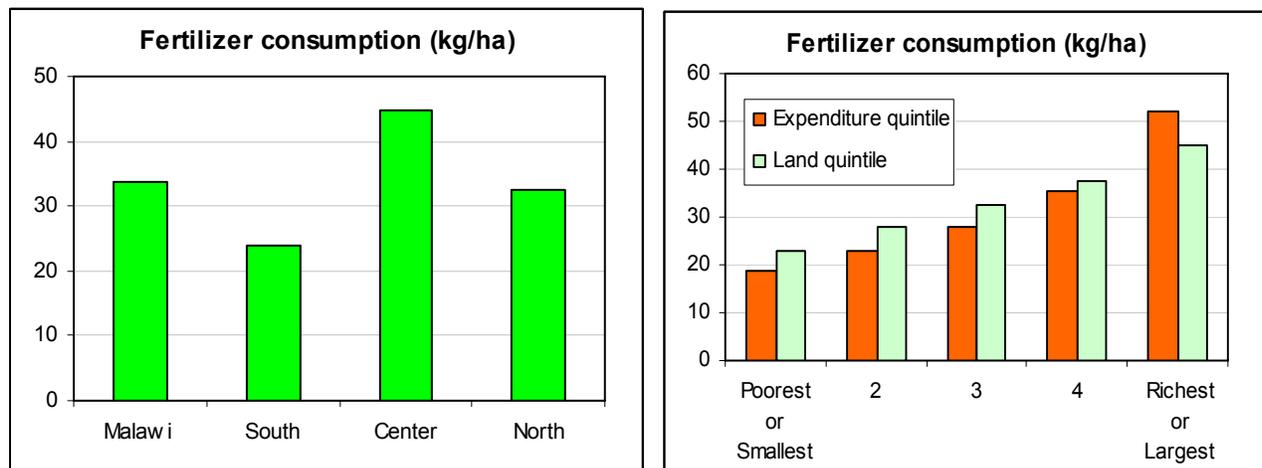
Figure 7.9: Price of fertilizer in Malawi, 1990 to 2005, in nominal and real terms



Source: AISAM 2006

38. While on average households in Malawi consume about 34 kg/ha of fertilizer annually, there are variations in fertilizer consumption between regions. The Central region consumes on average more fertilizer (45 kg/ha) while the South region the least (24 kg/ha). Fertilizer use appears to vary across income lines. As expected, richer households and households with more land holdings use more fertilizer (per hectare) than poorer households and those with less land (Figure 7.10).

Figure 7.10: Smallholder Fertilizer Consumption (kg/ha) by Region and by Land and Expenditure Quintiles



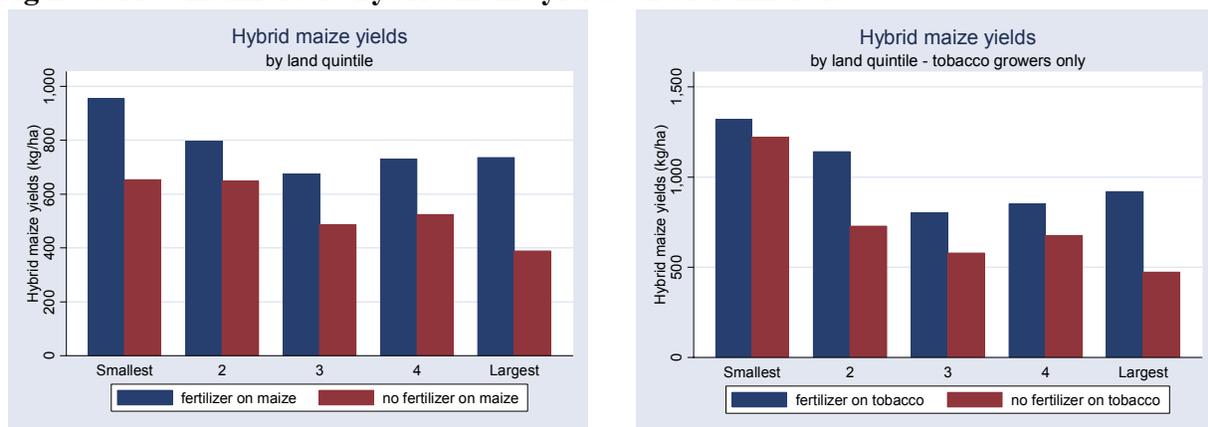
Source: National Statistical Office, IHS2

39. Many studies have examined farmers' decision to purchase fertilizer, both in other countries and in Malawi, in order to understand the constraints preventing smallholders from adopting these 'technological innovations'. Several studies were mentioned above, when discussing farmers' adoption of high-yielding varieties. As discussed, the empirical evidence from these studies highlights the importance to improve smallholders' access to credit, extension services, and input and output markets.

40. These findings are confirmed by two additional studies, Green and Ng'ong'ola (1993) and Minot et al (2003), that have focused specifically on constraints to smallholders' uptake of fertilizer in Malawi. Using data from the mid-1980s, Green and Ng'ong'ola find that, in descending order of importance, the choice of crop grown (maize or tobacco), the types of farming system, the access to credit, and the access to off-farm employment opportunities and more regular employment, were the main factors influencing fertilizer adoption.

41. Minot et al (2001) carried out a survey of 800 farm households in Malawi (and 900 farm households in Benin). They found that fertilizer use is closely related to crop mix, such that cash crops (cotton and tobacco) are often fertilized, while food crops are only sometimes fertilized. Farmers growing cash crops in the study were three times as likely to fertilize maize as those not growing the cash crop, perhaps because the additional income from growing a cash crop helps farmers pay for fertilizer. This finding is not uncommon in the cash crop literature, and is often attributed to the existence of positive externalities of cash crop production (compared to staple crops). For instance, farmers growing cash crops may have better access to credit for inputs. Alternatively, farmers already buying fertilizer for cash crops can realize savings on transaction costs for additional fertilizer for maize. Producing cash crops can thus help farmers raise maize yields.¹²³ They found that the predominance of maize, a non-traded staple food crop, in Malawi's agriculture is one of the causes for slow growth of fertilizer use in Malawi. Another important explanation for is that the percentage of fertilizer purchased on credit is very low in Malawi, at around 20 percent, which compares with approximately 95 percent in Benin.

Figure 7.11: Smallholders hybrid maize yields and fertilizer use



Source: National Statistical Office, IHS2

¹²³ Alternatively, this could originate from differences in unobserved characteristics among cash crop farmers associated with higher productivity.

42. The effect of cash crops in boosting fertilizer uptake appears to be confirmed by the IHS2 data. Figure 7.11 shows yield figures for hybrid maize by land size quintile in relation to fertilizer use. As expected, fertilizer application in hybrid maize production is associated with substantially higher productivity levels across farms of all sizes (land quintiles). Interestingly, the right-hand-side panel of Figure 7.11 shows higher maize yields observed in correspondence of fertilizer applications in tobacco production.

Access to Credit¹²⁴

43. The discussion so far has emphasized that access to credit by smallholder farmers continues to be a problem. Limited access to credit is a long standing problem in Malawi (and other countries). Lack of access to credit and high input prices entail that smallholder farmers do not have enough capital to purchase farm inputs at the same time smooth out their consumption needs. The IHS2 data confirm that credit access among smallholders remain extremely low. Considering any type of credit, 12 percent of the households' actually borrowed and only 6 percent received credit for agricultural activities (Table 7.6).

44. Households that are wealthier and with large land holding size have better chances of accessing credit including agricultural credit. The proportion of households accessing (any type of) credit increases from around 8 percent in the lowest wealth or land quintiles, to approximately 15 to 17 percent in the highest wealth or land quintiles (Table 7.6). This reflects the fact that both the formal and informal credit institutions prefer to lend to households that are more endowed both in land and income. In particular access to agricultural credit appears to increase substantially with land quintile.

Table 7.6: Farmer's Access to Credit by Land and Expenditure Quintiles

	<i>Any Credit</i>	<i>Agriculture Credit</i>
Land Quintile		
<i>Smallest</i>	7.96	2.35
2	9.99	4.59
3	10.18	4.77
4	12.77	7.55
<i>Largest</i>	16.97	10.96
Expenditure Quintile		
<i>Poorest</i>	7.88	4.19
2	11.23	5.79
3	12.06	7.11
4	13.48	7.03
<i>Richest</i>	14.47	7.35
All	11.84	6.30

Note: The table reports the percentages of households which actually borrowed. As noted some households may have access (i.e. ability to borrow) but not actually want to borrow (i.e. no demand).

Source: National Statistical Office, IHS2

¹²⁴ Note that access to credit is a difficult concept. Some households may have access (i.e. ability to borrow) but not actually borrow (i.e. no demand). In this section we use the term access to indicate households which have actually borrowed money.

45. The limited access to credit suggests the existence of credit market failures and the need to encourage participation of more microfinance institutions in rural credit provision. Across the world, limited access to rural credit by agricultural households reflects the high risks associated with agricultural production and marketing, high transaction costs for small loans, lack of collateral and severe poverty which renders the majority of the farmers not creditworthy.

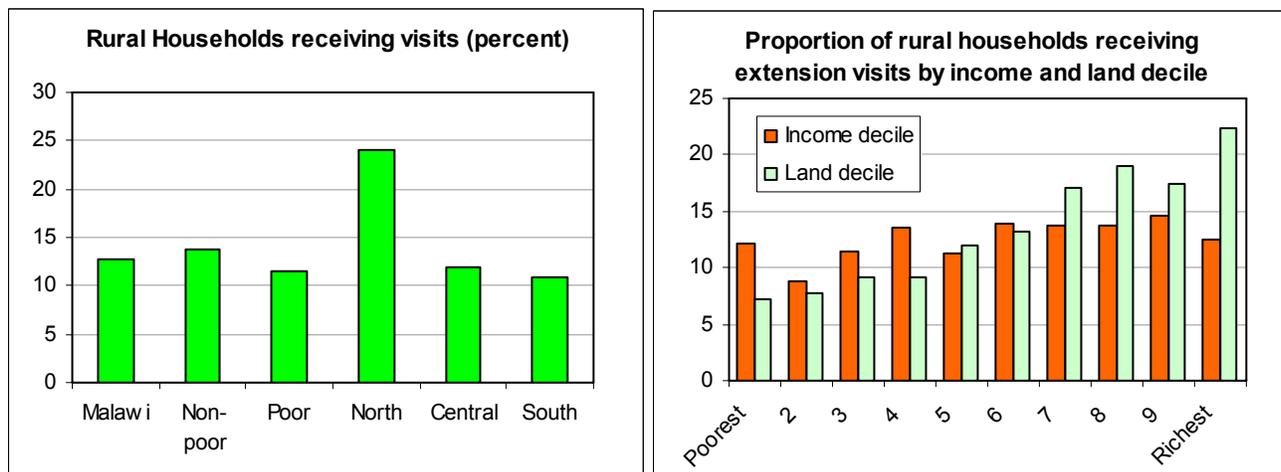
Access to agricultural extension services and benefit incidence analysis of public spending in extensions services

46. Agricultural extension services are an important mechanism in passing information to farmers on methods for improving crop yields and new techniques in farming. The IHS2 data suggests that currently farmers' access to extension services does not seem to be as far reaching as might be desirable. Only 13 percent of all farming households report receiving a visit from an Agricultural Field Assistant during the last completed cropping season (Figure 7.12). And on average, there is less than one visit per household.

47. Slightly more non-poor rural households (14 percent) report receiving visits from Agricultural Field Assistants than poor households (12 percent). The differences by region are more pronounced. Twice as many rural households in the North Region reported receiving visits from Agricultural Field Assistants (24 percent) than either the Central Region (12 percent) or the South Region (11 percent).

48. Farming households with the least amount of land reported receiving visits at one-third of the rate (8 percent) of farming households with the most amount of land (22 percent). Rural households with the least amount of land also received far less visits than households with the most amount of land.

Figure 7.12: Farming Households Receiving Visits from Agricultural Field Assistants



Notes: Decile is defined by per capita consumption. Land decile is defined by household land holdings. Data refers to extension visits to farming households, including urban and rural households with land, but excluding landless households and households not farming.

Source: National Statistical Office, IHS2

49. The analysis of utilization of public services in agriculture is focused on access by farmers to extension services. Farmers were asked whether they received advice from a field assistant and in what areas. The results suggest that the main focus areas for extension advice are crop production, the use of new seeds, and the use of fertilizer. The results of the analysis with a detailed breakdown by type of advice are presented in Annex 7B.

50. Looking at utilization rates across income quintiles, it can be seen that extension services are reasonably equitably distributed across the various income groups, with a slight bias towards farmers from higher income households. For example, at national level and without distinguishing the type of advice received, 10.4 percent of the farmers that received extension advice came from the poorest quintile, while 13.5 percent came from the richest quintile (Table 7.7). This bias is higher when excluding farming households from urban areas.

Table 7.7: Proportion of farmers that received advice from field assistant by quintile

	Poorest 20%	2 nd Quintile	3 rd Quintile	4 th Quintile	Richest 20%	Total
Total	10.4	12.5	12.6	13.8	13.5	12.7
By Gender						
Male	11.5	14.5	14.2	15.4	14.8	14.3
Female	7.2	6.4	7.7	8.6	7.6	7.8
Urban vs Rural						
Urban	0	3.7	8.1	10	2.9	5.2
Rural	10.6	12.8	12.7	14	14.6	13.2
By Region						
North	22.7	24	22.7	26.1	23.9	24
Centre	6.7	10.1	11.5	13.8	13.3	12
South	10	11.7	11.5	13.7	11	10.9

Note: Data refers to extension visits to farming households, including urban and rural households with land, but excluding landless households and households not farming.

Source: National Statistical Office, IHS2

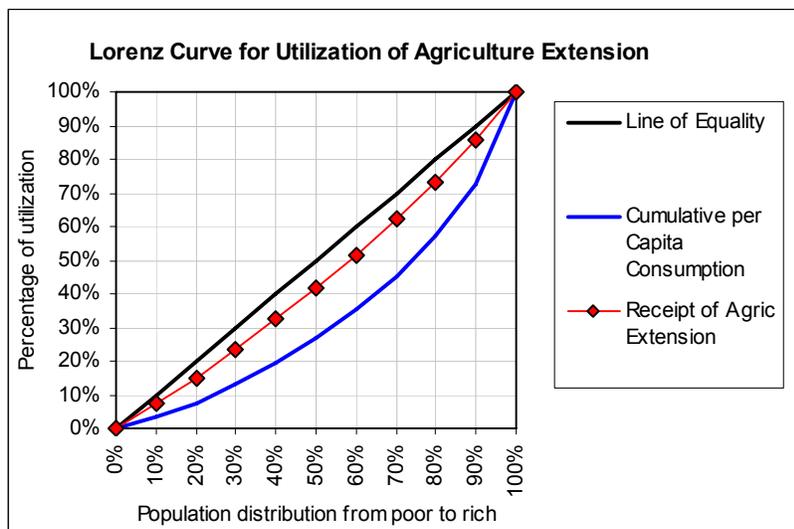
51. When the analyses are disaggregated by gender, the results remain highlight a substantial gender bias against female-headed households, across all income quintiles. Only 7.8 percent of female-headed farming households were visited by extension agents, as compared to 14.3 percent of male-headed farming households. When the analyses are disaggregated by geographical location, the results highlight that in urban areas it is mainly households in middle income households which benefit from extension services. As a result a focus on farming households in rural areas highlights a even sharper bias between the poorest quintile (10.6 percent) and the richest quintile (14.6 percent). In terms of regional distribution, as observed earlier, the results show that extension services in the northern region reach more than twice as many households compared to the central and southern regions. The regional breakdown also highlights that extension services are more biased towards the poor in the central region, while the bias is minimal in the other regions.

52. The focus towards higher income and male-headed farmers may partially reflect the bias towards larger farms, and field agents' prioritization of their time towards larger land holdings.

53. Figure 7.12 shows that the concentration curve for agriculture extension lies below the line of equality which, as observed earlier, indicates that agriculture extension services are biased

in favor of the richer households. As can be seen from Figure 7.12, access to agriculture extension is relatively more equitable than income distribution, however, as shown by the fact that the concentration curve for agriculture extension is well above the Lorenz Curve.

Figure 7.12: Concentration curve for agriculture extension services



Source: National Statistical Office, IHS2

PRODUCTIVITY OF SMALLHOLDER AGRICULTURE IN MALAWI

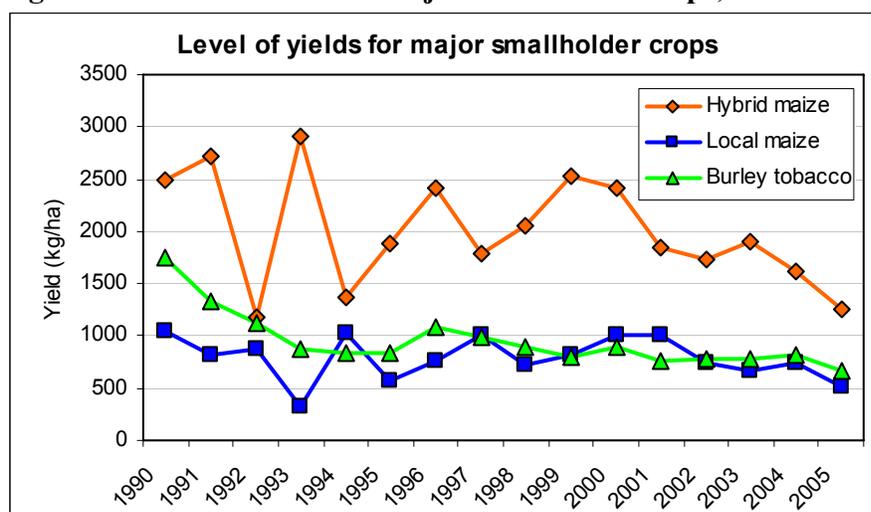
54. The importance of agricultural production as a source of livelihood for most Malawians implies that improvements in agricultural productivity would lead to rapid poverty reduction. Following the discussion in the previous section of smallholders' access to critical agricultural production inputs and services, here we attempt to measure and explain the levels of technical, allocative and overall economic efficiency among smallholder farmers in Malawi. The aim is to identify possible scope for efficiency gains and thereby improve the income of smallholders.¹²⁵ The analysis focuses on maize and tobacco. As discussed above, Maize and tobacco are the two major crops in the smallholder farming system in Malawi and together take up over 70 percent of the land under smallholder cultivation (GoM 2005).

¹²⁵ Technical efficiency (TE) refers to the ability of the farmer to produce on the maximum possible frontier (sometimes called frontier isoquant); allocative efficiency (AE) refers to the ability to produce a given level of output using the cost minimizing input ratios; and economic efficiency (EE) is the capacity of the farmer to produce a predetermined quantity of output at minimum cost given the available technology (Kopp and Diewert 1982; Bravo-Ureta and Pinheiro 1997). According to Forsund et al. (1980), technical efficiency implies a combination of inputs that for a given monetary outlay maximizes the level of production. Whereas technical efficiency reflects the ability of the farmer to maximize output for a given set of resource inputs, allocative efficiency reflects the ability of the farmer to utilize the inputs at his/her disposal in optimal proportions given their respective prices and the available production technology.

An analysis of smallholder farmers' efficiency in hybrid maize and burley tobacco production¹²⁶

55. Malawi's agricultural productivity has stagnated over the last two decades (Figure 7.13). There is a wide gap in Malawi between yields observed in on-farm experimental fields and actual yields obtained by farmers. For example, while potential yields for hybrid maize range from 5 to 8 tons per hectare, average actual yields have are around 1.5 tons and rarely reach beyond 2.5 tons. This large difference between the potential for the crops achieved in test fields and actual average farm yields, suggests abundant scope for improvements in productivity.

Figure 7.13: Yield trends in major smallholder crops, 1990 to 2005



Source: Ministry of Agriculture and Food Security

56. Ample research suggests that the problem that such poor performance is related to low adoption and less intensive use of efficient agricultural technologies, as discussed in the previous sections. The implication is that there is great potential in Malawi to increase productivity on the existing land holdings with the provision of better technologies to the smallholders.

57. Few past studies have measured efficiency among Malawian smallholder farmers and most of them have been narrow in their focus in terms of data as well as in considering a wide range of factors that may affect productivity. Evidence from past studies suggests low to moderate levels of efficiency among the majority of Malawian smallholders (see for instance Chirwa and Mwafongo 1998; Chirwa 2003; Edriss et al 2004; Tchale 2005; Tchale et al. 2005).

58. In the estimation of efficiency, the farmers' crop technology represented by the value of hybrid maize and burley tobacco is expressed as a function of the key factors: land, labor,

¹²⁶ The econometrics results in this section may suffer from measurement errors of some key variables such as labor. In fact, IHS2 time use data was collected over the past 7 days and is not attributed to a particular crop. While we control for intercropping by selecting monocropped plots, we do not control the fact that for households that have multiple agriculture activities. To entirely eliminate this measurement bias the analysis would need to focus on households that grow one crop only (e.g. maize, or tobacco). One reason for the low efficiency levels may therefore be due to the measurement errors.

fertilizer and seed. For the sake of ensuring consistency and controlling bias in the estimation of yields and efficiency, we analyze data from monocrop plots separate from intercrop plots. In general, monocropping is associated with higher intensity of management and the crop does not face competition. Complementary relationship occurs in the case of maize/leguminous intercropping where leguminous crops enhance soil fertility through biological nitrogen fixation. In cases where non-leguminous or non-symbiotic crops are grown together in an intercrop, there is likely to be competition for nutrients with the result that the yield potential for one or both crops is compromised (see Kanyama-Phiri et al. 2000). In the results, we therefore present the description of the production factors by cropping pattern.

59. To obtain the measures of efficiency, we estimate a functional form for the stochastic production frontier. We use the value of crop production as a representation of a production technology, with the assumption of constant returns to scale. The details of the data, methodology, and the results of the estimated frontier models are presented in Annex 7C. Below we present the main findings of the analysis.

Results of the analysis of technical, allocative and overall economic efficiency among smallholder farmers

60. In general our analysis indicates that fertilizer and land are the key factors in the production of both hybrid maize and burley tobacco. Labor is also a key variable especially in the case of burley tobacco where it is highly significant. This could perhaps be attributed to the higher levels of labor required in tobacco production. The estimated equations are significant and almost all parameters have the expected signs. Our estimates of the efficiency levels have therefore been predicted based on these equations.

61. The average level of technical, allocative and economic efficiency in monocropped hybrid maize is 49 percent, 41 percent and 20 percent, respectively.¹²⁷ As expected, the efficiency indicators for local/composite maize varieties are lower than those of hybrid maize. The average technical, allocative and economic efficiency levels for monocropped burley tobacco are 63 percent, 55 percent and 36 percent, respectively. These efficiency levels are relatively low when compared with findings from previous studies (Table 7.8), highlighting the relative inefficiency of which characterizes Malawian smallholder agriculture.

¹²⁷ Monocrops tend to consistently have higher levels of efficiency in maize and burley tobacco production, compared to intercrops; however, the difference in efficiency levels is minimal (Annex 7C). Higher yields and efficiency in monocrops is a reasonable finding since we do not account for the secondary output obtained from other crops in intercropping systems. In general we find that while monocrop yields tend to be higher, they also correspond to relatively higher levels of inputs such as inorganic fertilizer compared to intercrops. Hence the efficiency level is relatively similar. Similarly, the results do not show much difference in yield distributions by cropping patterns, although evidence from literature indicates that yield variation is likely to be higher under intercropping and especially more in the case of local compared to hybrid maize varieties (Graves et al. 2004). Such results suggest that cropping patterns do not necessarily affect efficiency. Evidence from farming systems research conducted in Malawi indicates that the majority of farmers practice intercropping as a means to spread the risk and intensify land use (Kanyama-Phiri et al. 2000). Intercropping is beneficial in the land constrained low input supply systems. This is because such systems intensify land use without augmenting the soil fertility and in that case farmers are likely to benefit from complementary type intercropping patterns i.e. the yield for maize improves but at the same time farmers benefit from the secondary crop which can either be sold or consumed.

62. When examining the relative efficiency across maize and tobacco, the results indicate that allocative inefficiency is higher in hybrid maize than is the case with burley tobacco implying sub-optimal input allocation in the production of hybrid maize. Such a result likely reflects the continued government intervention in maize markets (see below). Government intervention has kept prices low, and the relatively low profitability of maize has translated into inefficiency in farmers' investments in maize production. For instance, as a result of the artificially low prices, farmers find it unprofitable to use an adequate amount of fertilizers. At the same time, persistent market failures in maize marketing, and related food insecurity, have led to over-investment in (inefficient) maize production to attain household self-sufficiency.¹²⁸

Table 7.8: Estimates of efficiency from empirical studies in developing countries

Study/author	Country/region	Crop(s)	Mean efficiency levels (%)		
			TE	AE	EE
Bravo-Ureta and Pinheiro (1997)	Dominican Rep	All crops among smallholders	70	44	31
Chirwa (2003)	Malawi	Maize	65		
Bravo-Ureta and Evenson (1994)	Paraguay	Cotton	58	78	40
		Cassava	59	88	52
Fulginiti et al. (1998)	Ethiopia	All crops	56		
Townsend et. Al (1998)	Lesotho	All crops	24-36		
Edriss et al (2004)	Malawi	Maize	55		
Tchale (2005)	Malawi	Hybrid maize	77		
This study	Malawi	Hybrid maize	48.7	41.0	20.4
		Burley tobacco	63.4	55.2	35.5
		Local maize	47.1	30.9	14.6

Source: various studies

63. The wide range of values indicates large variations in performance across farms. Efficiency levels range from 35 to 84 percent in technical efficiency, 27 to 75 percent in allocative efficiency and 9 to 63 percent in economic efficiency. These results imply that if the average farmer in the sample was to achieve the technical efficiency level of its most efficient counterpart in Malawi, s/he would realize 42 percent more productivity and the allocative efficiency of the average farmer would increase by about 46 percent (see Table 7.9).¹²⁹ Similarly, the distribution of efficiency levels for monocropped burley tobacco ranges from 48 to 94 percent in the case of technical efficiency, 36 to 83 percent in allocative efficiency and 17 to 78 percent in economic efficiency. On average, the scope to increase technical, allocative and economic efficiency would therefore increase by 32 percent, 34 percent and 55 percent on average, respectively.

¹²⁸ Results from our study indicate that an improvement in returns of both hybrid maize and burley tobacco relative to the cost of inputs is likely to increase technical efficiency. Improved relative returns are likely to result in increased supply response among smallholder farmers; however some studies have argued that for staple crops such as maize, supply response is likely to be inelastic because farmers grow maize primarily for food self-sufficiency (Gray 1992; Pinckney 1993).

¹²⁹ The percentage increase in efficiency is obtained, for example, in the case of technical efficiency by using the following formula: $(1 - (48.2/88.4)) * 100$ where the figures are the mean and maximum levels of technical efficiency as shown in Table 2.

64. The distribution of efficiency estimates in Table 7.8 and Figure 7.14 suggest that the scope for efficiency gains is fairly large. Technical efficiency in hybrid maize production could be increased by up to 42 percent on average using the same type of production technology. Similarly, technical efficiency in burley tobacco production could be increased by up to 32 percent using the current type of production technology. By simple analogy, this implies that hybrid maize productivity could nearly double and burley tobacco output could increase by more than one-third using the same production technology, if key factors that currently constraint technical efficiency are adequately addressed.

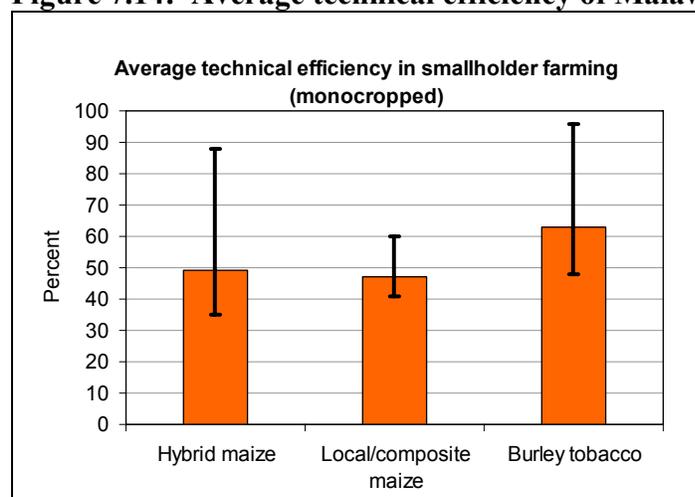
Table 7.9: Mean technical, allocative and economic efficiency of Malawian smallholder farmers (monocrop)

	Average efficiency (%)	Min	Max
<i>Hybrid maize</i>			
TE	49	35	88
AE	41	27	81
EE	20	9	72
<i>Local/composite maize</i>			
TE	47	41	60
AE	31	26	40
EE	15	11	24
<i>Burley tobacco</i>			
TE	63	48	96
AE	55	36	88
EE	36	17	84

Note: Technical efficiency (TE) refers to the ability of the farmer to produce on the maximum possible frontier (sometimes called frontier isoquant). Allocative efficiency (AE) refers to the ability to produce a given level of output using the cost minimizing input ratios. Economic efficiency (EE) is the capacity of the farmer to produce a predetermined quantity of output at minimum cost given the available technology. Figures in parentheses are standard deviations.

Source: Own calculations based on IHS2

Figure 7.14: Average technical efficiency of Malawian smallholder farmers (monocrop)



Note: Technical efficiency (TE) refers to the ability of the farmer to produce on the maximum possible frontier (sometimes called frontier isoquant). The bars show the range of values observed (minimum and maximum).

Source: Own calculations based on IHS2

65. On a national scale, therefore, the effect of a marginal increase in both technical and allocative efficiency could be substantial.¹³⁰ Typical profit margins for smallholder agriculture are estimated between 5 and 20 percent depending on the crop (see for instance Kaiser and Lungu, 1997). Hence, even a 20 percent improvement in agricultural productivity would correspond to at least a doubling of returns to the household from agricultural activity. Such an increase in household incomes would lead to rapid poverty reduction. Improving the productivity of smallholder agriculture, therefore, should play a key role in a broad-based economic growth strategy in Malawi.

Factors that determine the levels of smallholder production efficiency

66. From a policy perspective, therefore, it is important to identify and tackle the constraints to improved smallholder efficiency in agricultural production. The summary results of the analysis of the determinants of technical efficiency in hybrid maize and burley tobacco production are presented in Figure 7.15. Detailed results are presented in Annex 7C. Figure 7.15 shows the percentage change in the technical efficiency that results from a unit change in each variable.

67. Among the socio-economic characteristics, only the education level of the household head appears to be an important determinant of farm-level efficiency. Highly educated farmers exhibit higher levels of efficiency. A marginal increase in the highest level of formal education in the household results in an 11 percent increase in technical efficiency in hybrid maize and 2 percent increase in burley tobacco. This is consistent with findings reported in previous studies. For example, Bravo-Ureta and Evenson (1994), Kalirajan (1984, 1991), and Hussain (1989) among others, reported that formal education is likely to increase farm-level efficiency because of two related reasons: (i) educated farmers are able to gather, understand and utilize information from research and extension more easily than illiterate farmers and (ii) educated farmers are highly likely to be less risk-averse and therefore more willing to try out modern technologies.

68. Efficiency also increases with bigger household size, which reflects the labor intensive production systems. As expected, efficiency is inversely related to dependency ratio because in high dependency households less of the labor is available for agricultural purposes.

69. The relationship between the size of land holding and efficiency is unclear. Interestingly the sign of the relationship is negative for hybrid maize and positive for tobacco production.¹³¹ In the case of hybrid maize, efficiency decreases with increasing land holding such that a one hectare increase in land holding lowers efficiency by about 7 percent. This finding suggests the existence of an inverse relationship between efficiency and land size in maize production. In the case of burley tobacco, the results indicate that burley tobacco yields generally increase with land holding size. Hence, in the case of tobacco, there seems to be a positive yield/landholding size

¹³⁰ Moreover, the fact that in all cases the output gain associated with allocative efficiency is higher than that of technical efficiency, suggests that the allocation problems may be more yield constraining than technical problems. Thus improving overall efficiency may depend more on institutional and socio-economic than technological factors. This issue is explored further below.

¹³¹ This refers to total cultivable land, instead of actual cultivated land. The other production factors that are used in the efficiency estimation such as fertilizer, labor, seed and actual cultivated land are not included in the determinants equation in order to avoid possible correlation with the dependent variable.

relationship. This discrepancy may be attributed to the fact that when farmers are able to allocate a bigger share of land to tobacco cultivation, they are also likely to be able to afford higher levels of inputs and better crop management. In fact, unlike in the case of maize, the decision to allocate larger areas of land to tobacco in part depends on the availability of other inputs. Given the importance of this finding, the relationship between farm size and efficiency will be discussed in greater details below.

70. In the case of hybrid maize, use of purchased seed (which is most likely comprised of first generation hybrids) significantly improves technical efficiency, such that farmers that plant purchased seed gain on average 9 percent higher efficiency than those who do not.

71. Higher level of the Water Requirement Satisfaction Index (WRSI, see Chapter Three for details) enhances efficiency as it improves the soil capacity to effectively use the fertilizer and other inputs. On the other hand, the higher the variation in the WRSI, the lower the efficiency of production. This is especially the case for hybrid maize which is highly susceptible to both the intensity of rainfall. In line with the discussion in Chapter Three, this finding is consistent with the expected impact of the high risk environment onto production decisions, whereby farmers facing uncertain levels of rainfall choose low-input low-returns activities to minimize their risk exposure. The finding also highlights the importance of greater investments in irrigation, which would contribute to major advances in productivity both directly improving yields, and through its reduction of the risk faced by farmers.

72. Interestingly receipt of free fertilizer and seed is associated with lower efficiency. This result may reflect problems/delays in the implementation of the programs, such as delays in the distribution of the fertilizer which limit its effectiveness, or lack of knowledge on how to apply the fertilizer amongst the beneficiaries, or it may reveal that the household give low value to the free inputs (which leads to incorrect use)..

73. We also control for soil quality using three related variables: the cation exchange capacity (CEC) which indicates the soil's absorptive capacity and the levels of macro nutrients nitrogen (N) and phosphorus (P).¹³² In our analysis, these variables are designed such that the coefficient applies to those soils which do not meet the minimum absorption capacity and nutrients level. The negative coefficients on both CEC and N level dummies indicate that CEC and N are key soil quality variables that positively influence production efficiency of both maize and burley tobacco. The results are in line with findings of the few nutrient response analysis studies conducted in Malawi which indicate that N is the most limiting nutrient (and thus the most responsive) and that soils with good CEC enhance efficient utilization of nitrogen (Chilimba 1997; Kumwenda et al. 1998).

74. Availability of extension services and information related to technical aspects of the crop technologies plays an important role in increasing farm-level efficiency. The availability of an extension worker within the community and the usefulness of the extension messages (as perceived by IHS2 respondents) are significant determinants of technical efficiency. Further, farmers that are members of extension/market/credit related organizations exhibit higher levels of efficiency. For

¹³² These three variables have been derived using the GIS imagery information from the land use mapping exercise conducted by the Ministry of Agriculture in the early 1990s.

instance, farmer/credit club members have on average 5 percent and 12 percent higher efficiency in hybrid maize and burley tobacco production, respectively.

75. Similarly, availability of farmers' cooperatives in the community results in significant improvements in efficiency. Informal sources of learning and information sharing also increase efficiency as demonstrated by the positive and significant relationship between technical efficiency and the cumulative percentage of farmers that adopt hybrid and burley tobacco within the community. An increase in the number of farmers that adopt improved technology directly lowers the transactions costs associated with improved technology adoption, and thus having a positive externality in attracting more farmers to adopt the technology, and thus improve their productivity.

76. Access to agricultural credit is also positively and significantly related to efficiency. Most farmers that borrow agricultural loans actually use them to buy inputs.

77. Market access and transport infrastructure are very important determinants of efficiency. Farmers located further away from markets and access infrastructure have lower levels of efficiency, on average. For instance, technical efficiency is negatively related to the distance to daily, weekly and ADMARC markets and with the exception of the weekly markets, these results are highly significant. In the case of burley tobacco, the results are similar but not very significant. The type of road (tarmac, all weather, etc) and the distance from the nearest tarmac road also appear to be highly important.

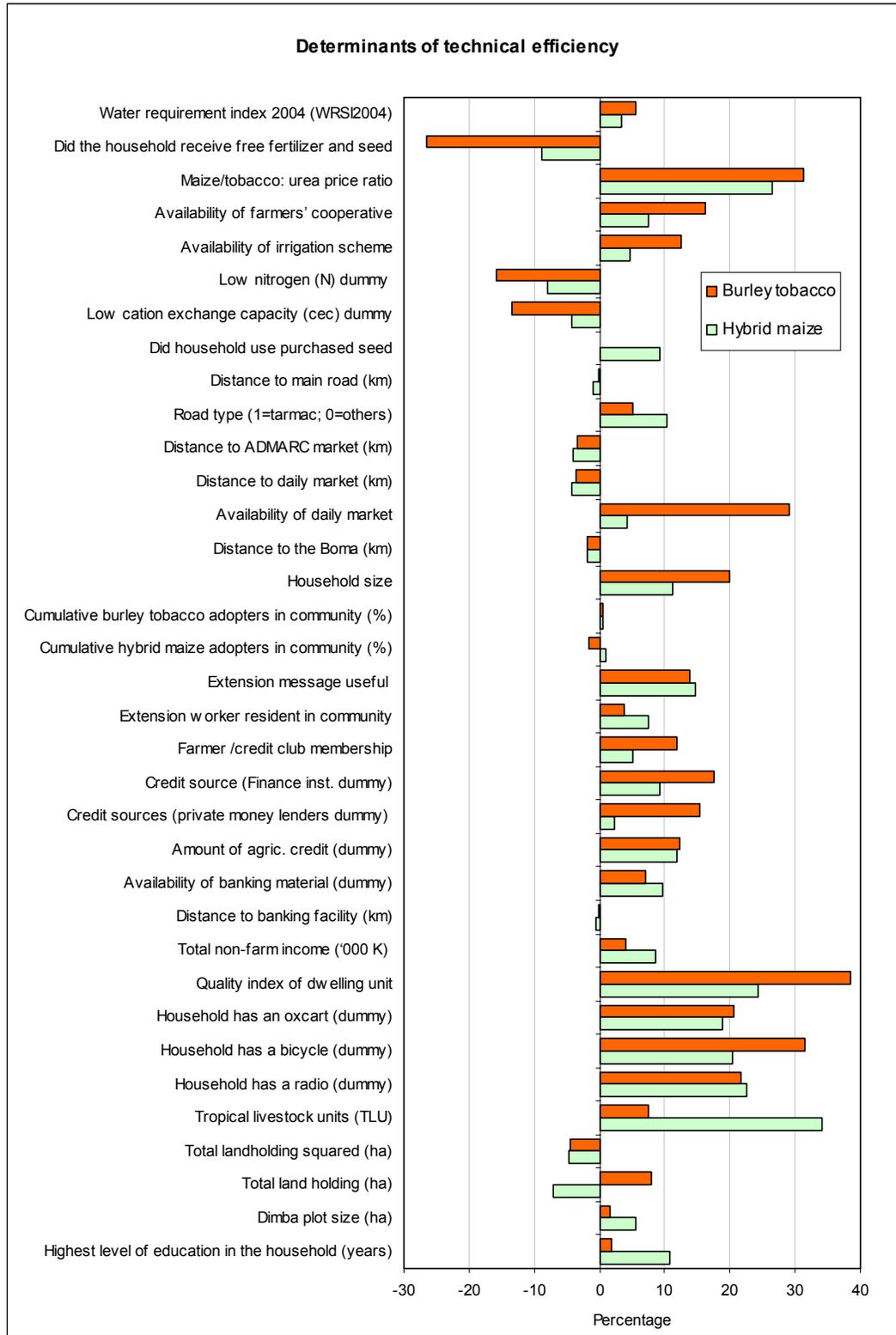
78. Most assets that complement farmers' liquidity position and improve their risk bearing ability such as the availability of livestock, quality of housing as well as other activities such as the growing of *dimba* crops, are associated with higher levels of farm-level efficiency. Results from this study indicate that all asset variables such as ownership of radio, bicycle, oxcart, wheel barrows and sprayers are positively correlated with technical efficiency in both hybrid maize and burley tobacco.

79. Other assets are positively related to efficiency through improving farmers' liquidity position thereby ensuring that farmers are able to rapidly respond to demands for cash to buy inputs and other factors. For example, the impact of an increase in livestock units (as measured by Tropical Livestock Units, TLU, see Chapter Two for details) indicates that a marginal increase in TLU results in a 35 percent and 8 percent increase in technical efficiency in hybrid maize and burley tobacco, respectively.¹³³

80. Access to a *dimbas* plot also enhances farm-level efficiency. This result may be attributed to the fact that most winter cropping in *dimbas* produces high value crops such as green maize and vegetables that are sold on the market, and the income is used to complement the purchase of inputs for upland crops.

¹³³ A Tropical Livestock Unit (TLU) is a live-weight based measure that is used to convert different livestock classes into a common unit. In general 1 TLU = 250 kg live-weight. The conversion factors are adjusted for the local tropical breeds.

Figure 7.15: Determinants of technical efficiency among Malawian smallholder farmers (OLS estimates based on the monocrop sample for hybrid maize and burley tobacco)



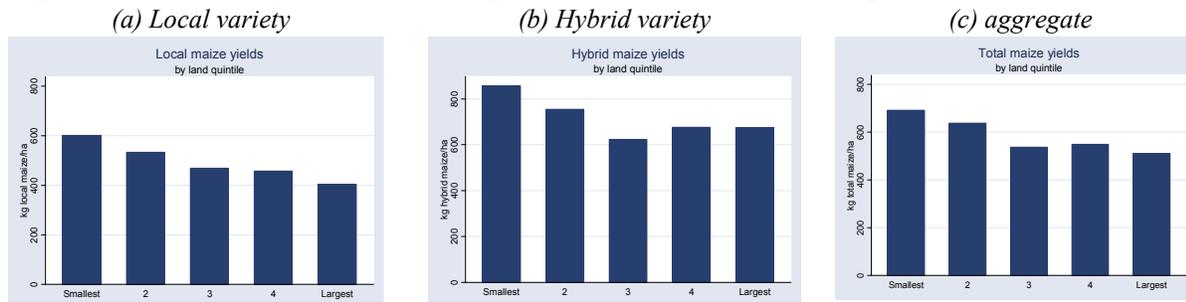
Note: Bars indicate the marginal effects calculated at the means (i.e. the percentage point change in the technical efficiency) that results from a unit change in the explanatory variable.

81. These results are consistent with the findings of other studies which indicate that complementary income from other sources on and off the farm is likely to result in high on-farm productivity as farmers use income from other sources to subsidize farm operations (see for instance, Dorward et al. 2004). Further, our findings also indicate that technical efficiency increases with increase in non-farm income.

The Relationship between Farm Size and Land Productivity

82. The analysis on determinants of productivity has highlighted the existence of an inverse relationship between land size and land productivity. At a basic level this implies that higher maize yields levels are obtained on smallest farms. Figure 7.16 below plots maize yields against landholdings quintiles.

Figure 7.16: Maize yields and land quintiles: inverse relationship?

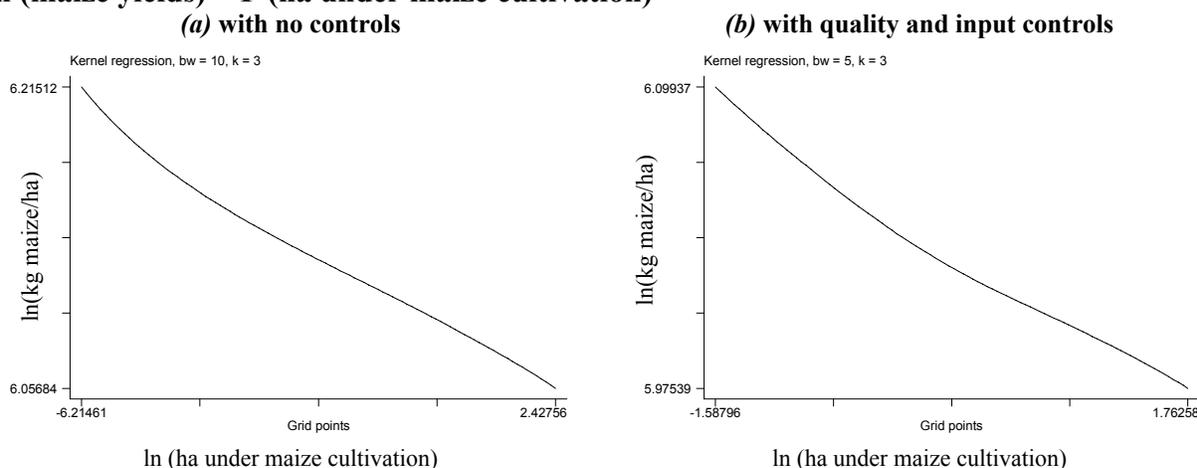


Note: Unreasonable outlier values have been excluded according to the following rule: for local maize all values above 2,075 kg/ha, for hybrid 3,843 kg/ha, and total maize 2,572 kg/ha. The general trend by landholding size is robust to variation in the rule

83. The efficiency analysis also suggests that this relationship holds even after controlling for the set of variables which determine productivity. The results of two basic non-parametric regressions between maize yields and land under maize cultivation (using IHS-2 data), appears to confirm the existence of this ‘inverse relationship’ (Figure 7.17).¹³⁴ In the second regression, we control for difference in land quality and input use by introducing dummies on fertilizer use and *ganyu* labor, as well as soil type and slope (on rain-fed land) and irrigation practices (on *dimba* land). Smallholders appear to be more efficient in the intensive production of the staple crop, even after controlling for labor and non-labor input use, and for land quality (as shown in the right hand side panel). If maize production per hectare is related through a significant inverse relationship to farm size, this might indicate higher levels of input productivity associated with small farms.

¹³⁴ Given the importance of this finding, additional analysis on parametric modelling of agricultural production functions is ongoing.

**Figure 7.17: Fitted values from non parametric regression:
ln (maize yields) = F (ha under maize cultivation)**



84. It is also useful to explore further the manner in which the efficiency levels calculated in the previous section change with respect to farmers' wealth and landholding size. The results in Table 7.10 again confirm the existence of an inverse relationship in maize production between land holding sizes and yield or productive efficiency.

Table 7.10: Efficiency levels by expenditure and land quintile (percent)

	Hybrid maize			Local maize			Burley tobacco		
	TE	AE	EE	TE	AE	EE	TE	AE	EE
By expenditure quintile									
Poorest	55	47	27	49	32	16	63	55	35
2	50	42	22	48	31	15	63	54	34
3	48	40	19	46	31	14	63	55	35
4	46	38	18	46	31	14	65	56	37
Richest	42	39	15	43	29	15	67	59	40
By land quintile									
Smallest	57	49	29	51	34	17	59	51	31
2	51	43	23	48	32	15	61	53	32
3	47	40	19	47	31	14	62	54	34
4	47	39	19	45	28	13	64	56	36
Largest	45	37	17	45	27	12	71	63	45

Note: These results are based on the monocrop sample

Land quintiles are derived from total land, i.e. including rain-fed, *dimba*, and fallow land.

85. These results suggest that in Malawi smaller maize farms tend to be more efficient than large ones. This result is quite common in the literature and has been extensively studied (see amongst others, Sen 1962; Mellor 1976; Hazell and Roell 1983; Feder 1985; Lipton, 1993; Heltberg 1998; Kanyama-Phiri et al. 2000; Singh et al., 2002). The existence of an inverse relationship between land size and efficiency, can be explained by the fact that land constrained farmers are forced to intensify their agricultural production and make more intensive use of the other inputs at their disposal. In other words, small farms are often found to be more efficient producers in labor-surplus economies because family workers are less costly and more motivated than hired workers and small farms are more likely to use labor rather than capital-intensive

technologies.¹³⁵ The existence of the inverse relationship between farm size and land productivity can also be explained by the existence of decreasing returns to scale in the production technology (due, for example, to high supervision cost and moral hazard considerations), scale-related distortions in factor markets that cause input utilization and output/input ratios to vary systematically with farm size, and the existence of unobserved factors (e.g. land quality) which determine variable factor proportions (i.e. labor to land ratios) across farms of different size.

86. This finding has powerful implications for economic growth strategy in Malawi. Smallholder farming can help contain poverty by providing an affordable home platform from which poor households can experiment with ways to improve their livelihoods. It also helps to ensure a degree of food security in rural areas where high transport and marketing costs can drive up food prices, while at the national level their higher land productivity has the potential to help Malawi attain greater self-sufficiency in staples.

87. Additional insights derive from the fact that the inverse relationship does not appear to hold in the case of burley tobacco production. In general, efficiency in farm operations depends both on the narrowly defined scale economies in production and also scale related transaction costs in input and output markets. In the case of Malawi's smallholder agriculture, therefore, the inverse relationship in maize production may be also explained by the failures in capital, labor and produce markets, and the near absence of land markets (Dorward 1999). These failures largely exert a downward pressure on the demand for capital and labor inputs, thereby resulting in lower levels of efficiency in maize production among the land abundant relative to the land scarce farmers. Smallholder farmers are most efficient in maize production because the incentives are such that it is not profitable to invest in (fertilizer) inputs, and they can smallholders therefore achieve greater efficiency than larger farmers given the prevailing low-input production technology (by intensifying use of cheap family labor).

88. This finding highlights the fact that, as will be discussed in the next section, current government marketing interventions in favor of net buyers of maize (i.e. subsidized maize sales) should be seen as a hindrance to increased maize production. The outcome of government interventions in maize markets has been a reduction in maize profitability compared to other crops, and as a result maize production is mainly undertaken for food security purposes by smallholders, who have can afford to make maize cultivation labor-intensive. This interpretation is in line with the results of the study by Zeller, Diagne and Mataya (1997, cited above).

89. Secondly, the lack on an inverse relationship in the tobacco burley production also highlights the constraints facing smallholders' access to inputs and credit, which prevents them from maximizing their efficiency in the production of these high value products. Yields increase with land holding possibly because bigger tobacco farmers are able to afford higher levels of inputs. If smallholder farmers were given access to the same set of technologies, for instance through improved credit, they might again prove to be more efficient than larger farms.

¹³⁵ The labor market dualism theory holds that households in the traditional agricultural sector face cheaper (imputed) labor costs, as they tend to use family labor more intensively than larger farms. The theory is commonly used to explain why the family-farm sector uses relatively more labor than the large (estate) farm sector. As a result of small farms facing an effectively lower price of labor, higher labor/land ratios (and therefore higher yields) can be observed on smaller land holdings, where the marginal product of labor is likely to be below the rural wage rate.

MARKETING OF SMALLHOLDERS AGRICULTURAL PRODUCTS

90. The marketing of agricultural produce in Malawi was liberalized in 1987 by allowing the participation of private traders, but the government still imposed restrictions on pricing through the operation of the state marketing agency ADMARC (Agricultural Development and Marketing Corporation). In 1995, the pricing of agricultural produce was fully liberalized except for maize where the government still maintained limited control over pricing through a fixed band that allows ADMARC's flexibility and full restrictions on the exportation of maize. The pricing of all other agricultural food produce was completely determined by market forces. The government next abandoned the price band in 1999, but still regularly intervenes in maize markets through the *ad hoc* provision of subsidized maize at pan-territorial prices through ADMARC.

91. Following the agricultural market liberalization reforms in the mid-1980s, several studies have evaluated the supply response to liberalization of smallholder agriculture marketing activities in Malawi and have highlighted the problems and constraints facing private traders in marketing activities (Kaluwa, 1992; Kandoole et al., 1988; Mkwezalamba, 1989; Scarborough, 1990; Chirwa, 1998; Fafchamps and Gabre-Madhin, 2001; Kherallah *et al.*, 2001). The main constraints faced by private traders include transport availability and transport costs, credit availability, storage facilities and lack of pricing and marketing skills.

92. A standard way to evaluate the extent to which the private sector is active and markets are working efficiently is to study the extent of market integration across spatially separated markets. The study of market integration examines the extent of co-movements of prices and the transmission of price signals and information across spatially separated markets. The more markets are integrated, and price signals are transmitted rapidly, the better the private sector efficiency in ensuring that a regional balance occurs between food-deficit and food-surplus areas.

93. Studies conducted in Malawi have shown that liberalization of markets has led to increased market integration. Goletti and Babu (1994) investigate the integration of maize markets and use monthly retail prices of maize at eight main locations between 1981 and 1991, and find that liberalization during the 1980s led to an increase in market integration, and that the major urban areas were pivotal in the price transmission. Chirwa (2001) examines the extent of spatial market integration for four food crops (maize, rice, beans and groundnuts) in eight selected markets and investigates the link between government pricing policy and market integration in Malawi. The findings of the study indicate that markets of food crops in Malawi given the price information are fairly integrated.¹³⁶ Markets for products where the government does not intervene such as rice, beans and groundnuts are very integrated, compared to maize which is influenced by governments ADMARC pricing policy and export restrictions (see below). Three main markets were instrumental in price transmission namely, Blantyre, Karonga and Lilongwe with Blantyre being the most central. The Blantyre market was most important for price transmission in maize, groundnuts and beans while Karonga and Lilongwe were central to rice and beans markets respectively.

¹³⁶ The short run price dynamics revealed that, on average, the price changes in central markets explain between 18 percent (maize) and 70 percent (rice) of the variation in the price of peripheral markets, and between 15 percent and 47 percent of the price adjustment to the long-run equilibrium takes place within a month.

94. The implication of these findings is that government attempts to stabilize the price of maize for food security purposes through direct intervention in maize pricing, has the potential to cripple the market mechanism and arbitrage opportunities for private sector. The findings of the studies provide evidence that private market systems are working reasonably well and that government intervention has been counterproductive to the development of maize markets. The studies also highlights that government could use the Blantyre and Lilongwe markets to influence the prices of food crops across rural markets through market operations in the three markets, in a manner that does not undermine the operation of private traders (Chirwa, 2001). In other words, since markets are well integrated, the government price stabilization policy could be carried out by influencing supply and demand conditions in these markets (instead of setting pan-territorial prices and undermining the operation of private sector traders).

95. In the rest of this section we focus on maize and tobacco marketing, building on the findings of two specific studies carried out jointly by the Government and the World Bank.

Maize marketing in Malawi: The findings of the Poverty and Social Impact Analysis (PSIA) of the restructuring of ADMARC

96. The study of market integration in Malawi have highlighted that functioning of maize markets remains the least efficient. This finding is reflected in high intra-annual seasonality and high inter-annual volatility in maize prices (see discussion in Chapter Three). Malawi's domestic maize prices exhibit much higher volatility compared to international prices (Figure 7.18). Such high volatility across years is partially due to production variability, as a result of unpredictable rainfall and over dependence on rain-fed agriculture. It is also the result of high transport costs and little private sector activity in maize import/export. Similarly, the high intra-annual volatility reflects the limited intra-annual storage by traders, due to a combination of limited access to credit and infrastructure, as well as the substantial uncertainty deriving from Government ADMARC maize pricing policy.¹³⁷

97. As discussed above, the market failures in maize marketing are also reflected in the predominance of maize in smallholder cropping patterns. This is an issue of significant concern given the predominant role of maize in food security in Malawi (as discussed in Chapter Four).

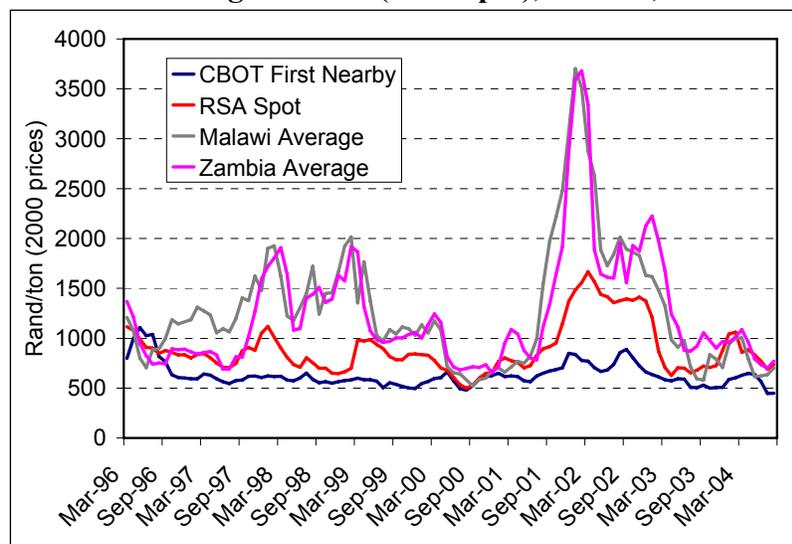
98. Maize marketing in Malawi is characterized by the ongoing activity of ADMARC.¹³⁸ The original mandate of ADMARC was to market agricultural produce and inputs, and to facilitate the development of the smallholder agricultural sub-sector through marketing activities and investments in agro-industry enterprises. In addition, ADMARC was mandated with a food security role in maize markets by acting as a buyer and seller in remote areas, providing grain storage across seasons and supporting a large marketing structure with distribution or market centers located in most urban and rural areas. This social role, namely the buying and selling of maize at reasonable prices in remote areas, was reflected in the pan-territorial and pan-seasonal

¹³⁷ As discussed in Chapter Three, prices are lowest after the harvest in June-July and increase steadily during the growing season almost doubling by the time we reach January-February, reflecting the fact that most households/farmers have depleted their own production and resort to buy from the market.

¹³⁸ Numerous studies that have described the operation and functioning of ADMARC. For a good summary, see the ADMARC PSIA 2004.

pricing system for smallholder farmers, particularly maize, and the establishment of markets in non-profitable areas.

Figure 7.18: Maize Price Fluctuations: Chicago Board of Trade (CBOT), South African Futures Exchange SAFEX (RSA Spot), Malawi, and Zambia, 1996-2004



Note: CBOT is the Chicago Board of Trade; RSA refers to the South African Futures Exchange (SAFEX).
Source: Gilbert and Dana (2005)

99. To fulfill its mandates, ADMARC operated a maize price band system that remained in effect until the mid-1990s. Further, it rapidly developed an extensive network and infrastructure of markets across the country comprising regional offices, divisional offices, area offices, storage depots, parent markets, unit markets and seasonal markets (Figure 7.19). These markets were used to conduct sales of farm inputs, purchase commodities from smallholders, and to sell food crops to net consumers.

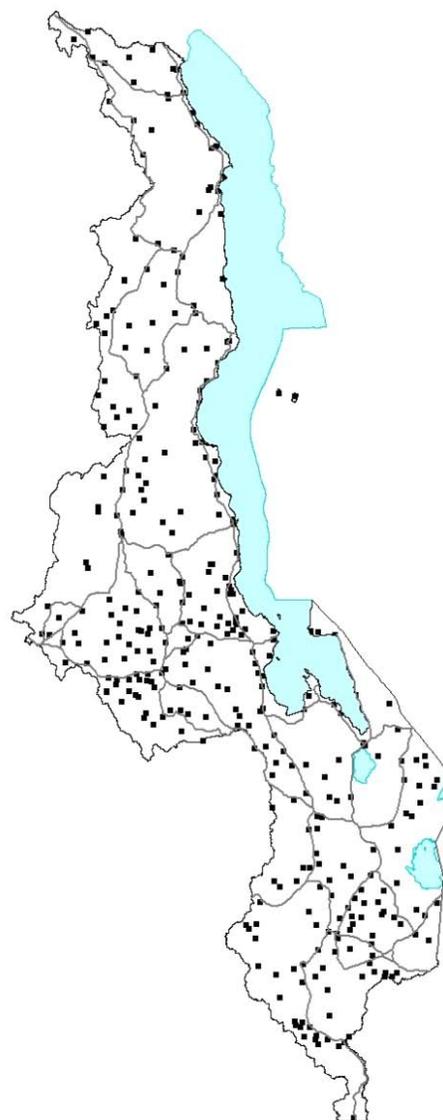
100. In fact, far from fulfilling its mandate, the operation of ADMARC has always been detrimental to agricultural development and food security. During the 1970s and 1980s ADMARC operated as a monopoly and was able to buy smallholders produce at artificially low prices extracting substantial rents to finance its inefficient operations. Further, over the years ADMARC started to deviate from its core mandate to engage in other business activities, repeatedly incurring substantial financial losses. Harrigan (1991) argues that ADMARC used the surplus reaped in the trading activities to invest in industrial activities in various sectors of the economy. Kydd and Christiansen (1982) note that between 1971 and 1979 ADMARC extracted about MK182 million from the smallholder sector, of which 14 percent was used to cross-subsidize smallholder food production and consumption while the remainder was used for equity investments and loans to subsidiaries with only 4.3 percent of such investments related to the development of the smallholder agriculture sub-sector.

101. In addition, the continued participation of government in maize marketing has restricted full participation of private traders. In an effort pursue its food security policy, during the late 1990s the government through ADMARC administered a price band consisting of floor and ceiling prices for maize. This price band was responsible for the unpredictability of maize prices (World Bank 2004). ADMARC maize prices fluctuated between 37 to 180 percent of farm gate prices in 1995 and 2000 respectively. Even after the abolishment of the price band in 2002, the government continued to influence maize prices by directing ADMARC to sell at a subsidized pan-territorial prices. The unpredictability of government participation in maize markets has to a large extent depressed the interest of private traders' participation in maize marketing.

102. In practice, the operation of ADMARC has been a major concern of the government and the international financial institutions for several years because of its deteriorating financial position, and its lack of success in developing agricultural markets and food security. ADMARC financial losses in the past have often derailed the macroeconomic framework. In addition, several analysts have argued that the presence of ADMARC markets and warehouses discourages private sector participation in maize trade, marketing, and storage, thus leading to longer-term inefficiency in marketing operations. Finally, the reports of mis-management of grain reserves during the 2001/02 food crisis reinforced the doubts surrounding ADMARC's role in food security.

103. In spite of such problems, significant controversy surrounds any decision to reduce ADMARC's marketing role. Firstly, there is concern that if remote markets are closed due to lack of efficiency, they are unlikely to be replaced by private traders because transportation costs are high relative to the return on maize sales. Secondly, in light of its substantial warehousing facilities, ADMARC is seen as a source of supply in times of scarcity. This is in spite of the fact that recently ADMARC has had difficulties in meeting demand in times of low production, and has had to introduce restrictions on the quantities purchased (O&M 1999; Nthara 2002). Nevertheless, the public perception of ADMARC's importance in agricultural marketing and food security remains much higher than supported by the data (Chirwa et al, 2004; Nthara 2002; ADMARC PSIA 2004).

Figure 7.19: ADMARC market locations and main road network in 2002



Source: This map has been provided by Todd Benson, based on information collected in Benson (2002). ADMARC provided a list of 363 markets. Locations were found for 344.

104. Given the political sensitivity of reforming ADMARC, and the potentially large social and economic consequences for the poorest groups of the population, the Government and the World Bank have carried out a joint poverty and social impact analysis (PSIA) of the proposed closure of some of ADMARC's agricultural markets. The goal was to minimize the impact on the budget while allowing the operation of social activities to be financed in a transparent manner.

105. The study assesses the impact of ADMARC marketing activities on household welfare in Malawi. The study is based on three background reports each using a different methodology. Two quantitative studies use econometric techniques to analyze data from the 1998 Integrated Household Survey (IHS1) and the 2002 fourth round of the Complementary Panel Survey (follow-up panels on the IHS1). These studies investigate the relationship between access to ADMARC's services and changes in household welfare during 1998 and 2002. The third study uses a qualitative methodology to carry out field research in 20 rural communities on the effects of the decline in ADMARC's marketing activities in recent years.

106. The results of the analysis indicate that access to ADMARC has a positive impact on household welfare. Specifically, the results of the analysis estimate that per capita consumption can be up to 20 percent higher for households living closer to ADMARC facilities.¹³⁹ This can be taken as evidence that ADMARC facilities provide rural households with valuable access to a marketing channel for buying inputs, selling their output and purchasing maize for self-consumption. This finding also substantiates the complaint from rural communities, particularly in remote areas, that they feel they have been adversely affected by the reduction in ADMARC marketing activities.

107. The second major finding is that the beneficial impact of proximity to ADMARC markets is more important in remote rural areas, far from major roads. More remote areas have less developed private markets, and alternatives to ADMARC services are less likely to exist there. In other words, ADMARC's impact depends on the availability of alternative marketing channels. In less remote areas, higher competition can be expected to lower marketing margins, hence reducing the benefit of access to ADMARC's pan-territorial prices. Indeed this is confirmed by the finding that in areas where private market infrastructure is developed and market services function, ADMARC facilities do not appear to have any positive impact on farm households.

108. The final finding is that the role of ADMARC is important in maize sales during the hungry season, but much less important during the harvesting season. This reflects the fact that small traders engage mainly in buying maize from farmers after harvest, and less on selling maize to consumers during the lean season. They transport maize out of remote areas and do not generally engage in storage activities. As discussed above, this is reflected in the large intra-annual maize price fluctuations observed in Malawi (as also discussed in Chapter Three).

¹³⁹ It should be noted that this finding is in contrast with the evidence from IHS2 data on the impact of ADMARC. As indicated in Chapter Two, living in a community with ADMARC is associated with higher rates of poverty (and ultra poverty, as shown in Chapter Three).

109. In sum, the agricultural marketing activities of ADMARC have been detrimental to the development of the agricultural sector. Nevertheless, the findings of the PSIA have highlighted the need to maintain the social protection functions currently provided by ADMARC, particularly in the remote areas of the country where the high transport costs and thin private markets can give rise to substantial price mark-ups compared to urban and semi-urban areas.

110. These findings highlight the need to separate the social protection functions presently carried out by ADMARC from its marketing and price stabilization functions. The social protection functions should be explicitly addressed in the context of Malawi's social protection policy, which will be discussed in Chapter Nine. The agricultural marketing and price stabilization functions should aim to minimize market disruption and foster the growth of private sector trading. The discussion above has highlighted the possibility to influence national prices by intervening only in the major 'lead' urban markets (as an alternative to setting panterritorial prices). It has also highlighted the need for an active policy to facilitate local intra-annual storage of agricultural commodities.

Tobacco marketing in Malawi: The findings of the Poverty and Social Impact Analysis (PSIA) of the reform of tobacco marketing arrangements

111. Smallholder cultivation of burley tobacco has been a source of increased income in rural areas (Jaffee 2003). Tobacco cultivation is one of the highest remunerative activities compared to other crops that are usually grown by most smallholders. As discussed above, about 15 percent of smallholders in Malawi cultivate tobacco, corresponding to about 350,000 households. Improvements in the marketing system of burley tobacco could contribute substantially to poverty reduction across smallholders. Together with improvements in on-farm productivity, sustained growth in the tobacco sector will only be achieved through improvements in the efficiency of the current marketing system (Box 7.2), and pass-through to farmers of a larger share of world prices.

112. In light of this, during 2003/04, the Government started a process of reform in the tobacco sector and, with the support of the World Bank, the Government carried out a study to review tobacco institutions and marketing arrangements. The study aimed to (i) assess if producers, particularly smallholders, have adequate representation in the governance of the various institutions; (ii) identify inefficiencies or overly high margins at all levels of the value chain; (iii) present recommendations on how to increase efficiency and competitiveness in the marketing chain, in order to increase growers' return and promote strong and shared growth in the sector. Four background reports on Malawi's tobacco industry were prepared in 2004. The reviews are very consistent in their findings and recommendations.¹⁴⁰

113. Firstly, the studies have pointed out that governance structure of the sector is not aligned with its structure. While following the liberalization of the 1990s, smallholders' share of the

¹⁴⁰ The reviews were presented for discussion amongst all stakeholders at a stakeholders' seminar on April 2005. Following this meeting, the Government, under the leadership of the Ministry of Agriculture, has started implementation of a detailed operational strategy (including the drafting of the necessary legal and regulatory instruments), in restructuring the tobacco sector's institutions and improving the efficiency of tobacco marketing in line with the reviews' recommendations.

sector production has increased from below 20 percent to over 80 percent by the late 1990s, the sectors' current legal and regulatory framework has failed to evolve in line with these structural changes. Notably, smallholders are greatly under-represented in the sector's main institutions (Tobacco Control Commission, TCC; Agricultural Research and Extension Trust, ARET; and the Auction holdings Limited, AHL) despite being the largest group of farmers in the production of the tobacco crop. Also, for instance, the Tobacco Association of Malawi (TAMA) is represented on the Tobacco Control Commission (TCC) Board but the National Smallholder Farmers Association of Malawi (NASFAM), which has 100,000 members, has only got an observer status on this Board.

114. Secondly, the institutional structure is fraught with monopolistic/oligopolistic practices, rents and conflicts of interest, and evidence of such practices has been observed throughout the marketing chain. For instance, there is heavy suspicion of collusion and anti-competitive practices in the buyers' market. There are currently 2 major companies who together control 95 percent of the market in Malawi (as opposed to 16 in Zimbabwe, for example). The auction floors are another area where these monopolistic/oligopolistic practices can be seen as the AHL is the sole authority in this area. On the issue of conflicts of interests, examples have been cited within the operations of TAMA as the organization is mandated to negotiate trucking rates but is compromised by the fact that satellite depot owners are often truck owners as well. Unsurprisingly transport charges for transporting smallholders' tobacco to the auction floors are extremely high.

Figure 7.19: Distribution of revenues from tobacco production in 2004

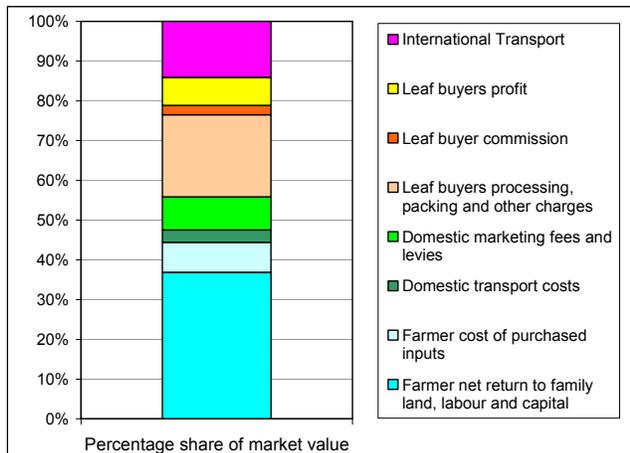
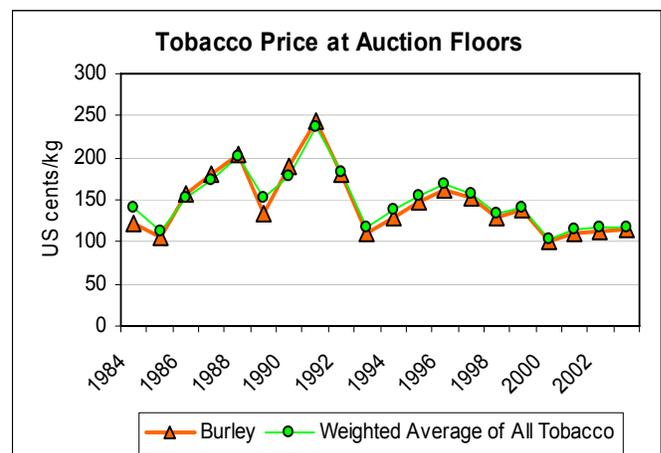


Figure 7.20: Tobacco prices in Malawi 1984-2004



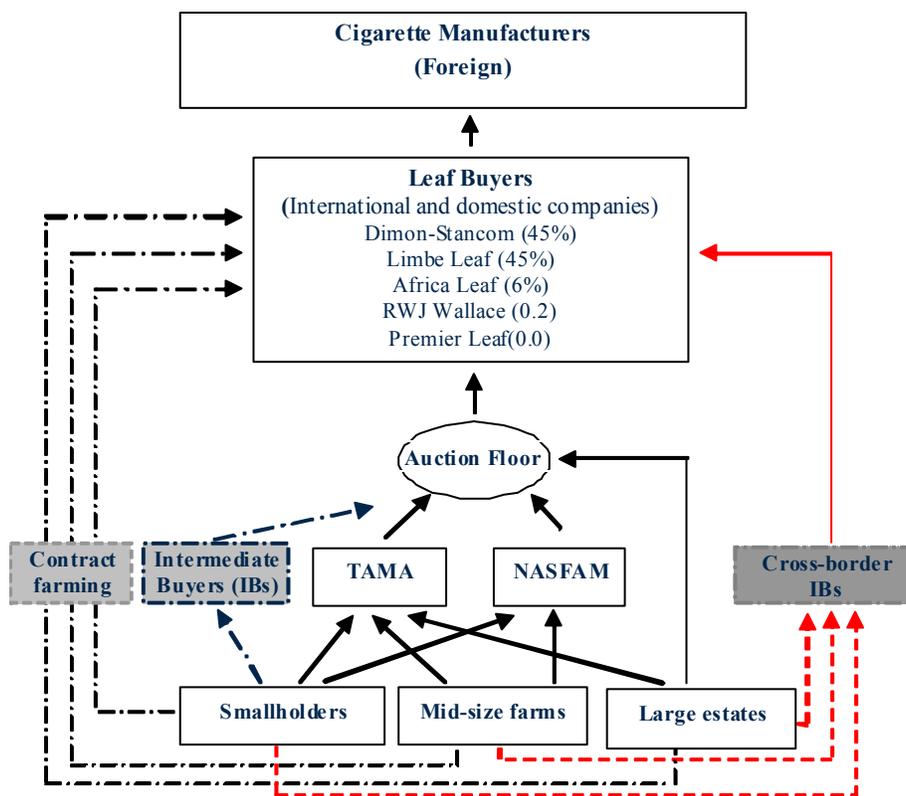
Source: World Bank and Government of Malawi (2005)

115. Thirdly, the sector's institutions lack capacity, accountability and internal efficiency. The Ministry of Agriculture (MOA), TAMA and TCC all have limited capacity. This is due to a mix of constrained resources and inefficient management. In the case of the TCC, for instance, very few of its 130 staff have relevant technical skills (most of the employees are administrative and support staff) which severely limits its capacity to lead policy formulation and enforce regulations. However, TCC's generous employment benefits and perks contribute to its high

overheads and operating costs. Similarly, AHL maintains 730 permanent staff with very generous employment benefits despite the seasonal nature of its operations.

BOX 7.2: THE TOBACCO MARKETING CHAIN IN MALAWI

The marketing chain for tobacco in Malawi is illustrated in the diagram. Production begins on the lowest platform with the various types of farming entities: smallholders, mid-size farms and large estates. From this point, the tobacco product can pass through any of five channels: sold directly to leaf buyers through contract farming arrangements, sold directly to domestic intermediate buyers (IBs), sold directly to cross-border intermediate buyers, sold to the leaf buyers through the traditional channels of either TAMA or NASFAM (depending on the affiliation of the farming entity). TAMA and NASFAM, being the farmer associations, act on behalf of their members to transport the tobacco to the satellite depots, amongst other services, before it is sent to the AHL to be sold to tobacco buyers on the auction floors. After the tobacco product is purchased, it is sent to cigarette manufacturers where the final product of the tobacco is created. Throughout this process, there are various other important stakeholders creating input for the processes of marketing chain and/or overseeing the entire network: ARET and the credit institutions provide services to aid farmers in the production stage; the TCC is the main regulatory body for tobacco and forms a link between the farmers, buyer and the Government; the Government oversees the process chiefly through the Ministry of Agriculture but the Ministry of Finance and the Ministry of Economic Planning and Development also partake in the discussions on the industry; the donors such as WB, USAID, DFID and the EU provide advice to the Government with regard to improvements on the industry and economic performance of the country as a whole; civil society organizations such as the Malawi Economic Justice Network and Civil Society Agriculture Network also have interests in the tobacco industry.



Note: Dashed lines indicate informal marketing arrangements.

Source: World Bank and Government of Malawi (2005). Pathways to greater efficiency and growth in the Malawi tobacco industry. A Poverty and Social Impact Analysis. Draft Paper, April 2005.

116. Fourth, producers bear the weight of these compounded rents and inefficiencies. There is evidence that monopolies/oligopolies, rents and inefficiencies all along the value chain are passed down to producers, depressing their incomes and return on investments (Figure 7.18). As a result, smallholders are trapped in a low-productivity low-income production strategy. It is essential to reduce the levies and costs of the various institutions if the sector is to be put on a sustained growth path. As an example, a 10 percent increase in sale price (through the capture of a small share of EU/USA preferences and a small reduction in international marketing and processing costs) and a 10 percent reduction in domestic costs (easily absorbed by transport costs alone) would increase producers' net return by nearly 50 percent. This would have a dramatic impact on poverty reduction for smallholders and boost agricultural and economic growth.

GOVERNMENT POLICIES FOR SMALLHOLDER AGRICULTURAL GROWTH

117. The analysis in this chapter has highlighted that improvements in smallholder productivity can provide a substantial engine of broad-based economic growth and wealth creation in Malawi. A strategy for smallholder-led agricultural and economic development offers important economic and social advantages in Malawi (Box 7.3). Broad-based agricultural growth is economically efficient and puts increased purchasing power into the hands of the rural population, and not just a privileged few. This recommendation is in line with empirical work, in Malawi and other low-income countries, showing that small and medium-sized farms are typically more efficient producers than large farms in low-income countries and have better consumption and investment patterns for stimulating growth in the non-farm economy (see amongst others, Mellor 1976; Hazell and Roell 1983; Feder 1985; Lipton, 1993; Heltberg 1998; Diao 2005; Hazell and Diao 2005). Broad-based agricultural development (through both increased productivity and diversification into high-value crops) in turn requires equitable access to land, irrigation, modern farm inputs, credit, protection against weather risk, effective extension services, farmers cooperatives, access to transport infrastructure and market access. The analysis in this chapter has highlighted several issues that have implications for agricultural policies in Malawi.

The opportunities for land reform

118. There appear to be a number of policies that the government can pursue to improve land utilization. While smallholders have limited access to land, there are substantial areas of underutilized or idle lands, mostly belonging to medium and large estates or Government agencies. Given the poor performance of estate agriculture and the large areas of uncultivated land, there seem to be ample opportunities for land reform, particularly to increase access to land for the landless and near-landless, which is likely to have a significant impact on poverty reduction (Chirwa, 2004). Substantial areas of agricultural land could be transferred to poor landless or land-poor farmers through rental or sale, without having any impact on production of the existing commercial farms.

119. Further, the government could provide incentives to large-scale farms not to leave the land idle or under-utilized. For instance, increasing ground rents on leasehold land and improving their collection, would make it expensive for estate lease holders to leave land unused, or may encourage them to rent out or sell the land.

120. Until recently, Malawi did not have a comprehensive policy on land ownership, use, management, control and transmissibility. The absence of a well articulated land policy has been blamed as a cause of the limited agricultural development in the country. The government finalized the formulation of a comprehensive Land Policy in 2001. However, the policy has not yet been transformed into a law and is awaiting implementation. The new Land Policy intends to address the land redistribution issues described above by developing a number of effective and transparent mechanisms which will enhance the equity and the efficiency of Malawi's land distribution. The government also recently increased ground rents on leasehold land, and there are plans to introduce a land tax on freehold land. All of these measures would foster the sale and rental markets for land, leading to improved distribution and more efficient utilization of land, and contributing to higher production and faster poverty reduction.

Investing in irrigation and smallholder dams

121. There are compelling reasons for Malawi to focus on irrigation in general, and small scale irrigation in particular. The availability of new irrigation technologies (low cost drip systems) make small scale irrigation possible, and open up new opportunities for water conservation. Greater investments in irrigation would contribute to major advances in productivity both directly improving yields, and through its reduction of the risk faced by farmers. Further, since unreliable rainfall is the leading cause of harvest failure and hunger, investing in irrigation would also reduce the risks of food insecurity.

122. Agricultural intensification through irrigation has the potential to quadruple yields and provide at least two harvests per hectare to the small farmer in a given year. FAO analysis of data from Asia showed yields per hectare for most crops increased by between 100 to 400 percent as a result of irrigation (FAO 1999). The same report highlights that small irrigation schemes in Africa (Kenya and Zimbabwe), where average size holdings ranged between 0.5 ha to 1.0 ha, revealed that irrigation generally contributed 25 to 80 percent of total household income, thereby contributing substantially to poverty reduction.

123. The government has recognized Malawi's irrigation potential and has identified water harvesting and small scale irrigation as a key instrument for reducing vulnerability and poverty in the MGDS. Given that poorly planned irrigation programs also introduce their own risks (e.g. increased malaria incidence), water harvesting programs should be closely monitored and their impact further evaluated.

Improving smallholders access to inputs

124. Access to inputs has been identified as the most critical constraint towards improved agricultural growth. Current levels of fertilizer use in Malawi are too low and urgent action is required to boost fertilizer uptake and use of high-yielding seeds, and reduce the cost of these inputs, especially for poor smallholder farmers who currently cannot afford them.

125. Over the medium term, the most appropriate interventions to achieve this goal entail strengthening fertilizer markets through structural policies, such as by creating a mechanism for

collaborative logistical planning of imports, removing transportation bottlenecks (and thereby reducing transport costs), facilitating credit provision to smallholders, and improving extension services.

BOX 7.3: CAN MALAWI LEAPFROG THE NEED FOR AGRICULTURAL DEVELOPMENT AND PROCEED DIRECTLY TO INDUSTRIALIZATION? *

The “rethinking rural development” school (represented by Maxwell, Urey, and Ashley, 2001; and Ellis and Harris, 2004) argues that, as a result of the increasingly integrated and diversified nature of rural economies, agriculture should no longer be viewed as the primary engine of rural growth. They emphasize migration and rural non-farm activities and believe that diversification options for multi-occupation and multi-location households can become the relevant engine of growth for rural areas.

There are several flaws with this line of reasoning. Firstly, income diversification is actually not new at all and has long been observed as a strategy by which rural households cope with risk and enhance their incomes (e.g., Collier and Gunning 1999; Reardon et al. 1994). Most African farmers have not been able to find pathways out of poverty despite income diversification strategies over many decades. Even in many Asian countries, farmers were highly diversified before the Green Revolution (Ravallion and Datt 1996), yet it took dramatic changes in agricultural technology and productivity to make any significant inroads into poverty levels. Therefore, it is not clear why that strategy should suddenly work much better today, particularly in countries such as Malawi where the nonagricultural sectors are not actually thriving either. In fact, Malawi currently has a small and inefficient industrial base whose growth performance is still less than stellar. Turning this performance around is a daunting task, and requires successfully competing with the world’s best in export markets.

Secondly, industry currently employs about 10 percent of the labor force in Malawi, and its employment elasticity remains low compared with agriculture (i.e. agriculture is more labor intensive). Even if the performance of the industrial sector were to improve dramatically and it grew at the kind of rates observed in many of Asia’s Tiger economies during their golden years, it would still take decades before a large enough share of the labor force could be pulled out of agriculture to seriously reduce poverty.

History shows that countries invariably diversify as they develop, and that involves a decline of agriculture relative to the rest of the economy and the movement of workers out of agriculture and into other occupations. But diversification is demand driven and follows rising per capita incomes; it is not a primary engine of growth in its own right as the rethinking rural development school seems to believe.

Malawi’s path to wealth creation and industrialization, therefore, will likely entail increased agricultural development, based on improvements in smallholder productivity. A strategy for smallholder-led agricultural and economic development offers important economic and social advantages in Malawi (and in many other low income countries). Small farms are more efficient producers in labor-surplus economies because family workers are less costly and more motivated than hired workers and small farms are more likely to use labor rather than capital-intensive technologies. They help contain poverty by providing an affordable home platform from which poor households can experiment with ways to improve their livelihoods. They help prevent premature urban migration and the explosive growth of large cities. They also ensure a degree of food security in rural areas where high transport and marketing costs can drive up food prices, while at the national level their higher land productivity has the potential to help poor countries attain greater self-sufficiency in staples such as cereals, tubers, and even livestock.

Many such advantages slowly disappear as countries develop and labor becomes scarcer relative to land and capital, leading to a natural transition toward larger farms (a common misdiagnosis stems from overlooking this broader economic context for determining the economics of farm size) and an exodus of small farm workers to towns and non-farm jobs. But that transition does not normally begin until countries have grown out of low-income status, and it typically takes several generations to unfold.

* Based on a short paper by Peter Hazell and Xinshen Diao, “The Role of Agriculture and Small Farms in Economic Development,” August 2005. (N.B.: All references to Malawi have been added and were not in original paper)

126. In the short-term, however, there may be a role for a subsidy on fertilizer targeted to poor smallholders. A ‘market-smart’ subsidy will aim to minimize the extent of direct government involvement in fertilizer imports and distribution, and will be carefully targeted to boost the productivity of poor smallholders (to minimize displacement – see below). A blanket subsidy on fertilizer is not the solution. Not only would such a policy require substantial fiscal costs, but it would also be inefficient, and highly inequitable, benefiting rich farmers and estate owners the most, and likely to be associated with significant leakages and rent-seeking.

127. The operation of the fertilizer voucher-subsidy should be redesigned to follow the principles for market-smart subsidies (see Box 7.4). Programs should be designed and implemented in ways that promote the profitable use of fertilizer, the development of input markets, and the alleviation of key structural constraints such as poor transport infrastructure in remote areas.

128. A possible improvement to the current voucher-subsidy scheme would be to let the government identify the beneficiaries, and issue vouchers for a certain value that will guarantee a fixed discount to the voucher holder when he or she buys inputs throughout the country. The value and type of voucher could also be differentiated to better target the needs of different groups of small holders.

129. Once the beneficiary has received his or her voucher, the beneficiary will be free to take that cash discount voucher to an accredited input distributor or agro-dealer and put it towards the purchase of a broad choice of fertilizer, seed or agrochemical, as permitted by the voucher. The supplying retailer will then take this voucher and proof of delivery of the input and present it for payment at the counters of the appointed bank. The bank will confirm the authenticity of the voucher and the validity of the proof of delivery and pay the voucher value to the supplier. Such a voucher system is therefore not only simple, but also efficient and cost effective.

130. The supplier would then receive payment for the value of these vouchers directly from the government. Such a system encourages price competition between various fertilizer dealers, thus maximizing the efficiency of the subsidy scheme. Government agencies together with competent private and statutory bodies should be involved in registering competent agro-input (seed, fertilizer and crop protection chemicals) suppliers and rural agrodealers. Seed suppliers should not be limited to commercial seed companies, but open to seed associations and private seed growers, and community based seed producers, whose seed has been inspected by the authorities.

131. Beneficiaries would have to be identified very early in the season for two reasons: (i) to allow farmers who are not beneficiaries to make early alternative arrangements; (ii) to sensitize the private sector of the scale, type and distribution of the subsidy in order for them to adequately cater for it. The profile of a beneficiary need not be static. There could be a range of beneficiary profiles that are targeted with different types and values of voucher. To the extent that the value of the voucher is increased, the program will become more progressive. Though the choice of beneficiaries of the subsidy should be left to the discretion of the government, there would be

BOX 7.4 DESIGNING AND IMPLEMENTING MARKET-SMART FERTILIZER INTERVENTIONS

If subsidies are to be used to promote fertilizer use, they should be “market-smart.” The distinction between traditional fertilizer subsidies and market-smart fertilizer subsidies is that market-smart fertilizer subsidies are designed to shift incentives faced by buyers and sellers in ways that are consistent with the development of sustainable private sector-led markets for fertilizer. Market-smart subsidies also differ from traditional subsidies in that they are targeted at a wide range of potential entry points, not just the price paid by farmers when they purchase fertilizer. In designing market-smart interventions to promote increased fertilizer use, policy makers and project designers should bear in mind the following guiding principles:

- *Consider subsidies only when the enabling environment is favorable:* Subsidies that target specific bottlenecks within the fertilizer sector are unlikely to be effective when the larger enabling environment for private sector investment is unfavorable. For example, improving farmers’ access to production credit by strengthening rural finance institutions is pointless if fertilizer remains physically unavailable; if prices of complementary inputs are very high; or if prices of outputs are very low (relative to border prices).
- *Use subsidies only to promote interventions that are economically efficient:* Whether subsidies are used to provide incentives to farmers to experiment with new technologies or to retailers to invest in fertilizer storage, they should lead to economically efficient outcomes.
- *Use subsidies to link fertilizer to the use of complementary technologies:* Because agronomic response functions are determined by interactions among many factors, the full benefits of increased fertilizer use are achieved only when accompanied by changes in complementary inputs and practices. Flexible farm-level subsidies that allow farmers to select an appropriate basket of inputs to improve productivity (such as improved seed, green manures, or conservation tillage practices) are more likely to be market-smart.
- *Administer subsidies in ways that develop commercial fertilizer markets:* By definition, “market-smart” subsidies must facilitate market development, and should be attuned to the particular stage of input market development. For example, they should target farmers who do not currently purchase fertilizer in commercial markets but have a better-than-average chance of becoming commercial purchasers in the future.
- *Avoid undermining rural finance markets:* Subsidies should be designed in ways that are minimally disruptive for rural financial markets. For example, concessional grants should be made only to farmers who do not currently make use of commercial credit and are unlikely to do so in the foreseeable future.
- *Develop demand and supply simultaneously:* Some subsidy interventions operate on the demand side, whereas others affect supply. To “jump start” markets on the path to sustained market development, it is desirable to stimulate both the demand side and supply side of the market at the same time, unless one market component is clearly the sole constraining factor.
- *Establish an exit strategy:* Mainly for political reasons, subsidies often prove very difficult to stop. Subsidies introduced with a clear time frame and explicit exit strategy are more likely to be market-smart.
- *Ensure transparency in management of subsidy schemes:* Subsidy schemes should include monitoring mechanisms that encourage transparency in management to reduce susceptibility to rent-seeking. Information should be made publicly available regarding which subsidies have been put in place, who the intended beneficiaries are, and detailing the terms and conditions of the subsidies.

Source: World Bank (2006). Promoting Efficient and Sustainable Fertilizer Use in Africa: A Toolkit for Practitioners. Africa Region. The World Bank, Washington DC.

room in the system for other donors to fund the general subsidy or to use it as a means to target their funding to a specific profile of beneficiary within the overall subsidy program.

132. Fertilizer subsidies to non-poor farmers are associated with displacement of private purchases (which undermines the goal to increase overall fertilizer consumption). Government interventions to promote fertilizer, therefore, should aim to minimize disruption to the fertilizer

market and should also in as far as possible entail some participation in the costs of the input, e.g. through fertilizer vouchers, or by strengthening the existing input for work programs. Subsidies should be better targeted to those who cannot afford it to minimize displacement. The pros and cons of providing free fertilizer as a social protection policy for the poorest households will be discussed further in Chapter Nine.

133. Finally, given the current fiscal situation in Malawi (as discussed in Chapter Six), the priority policy area for the new Government should be to achieve macroeconomic stability, and reduce domestic debt and interest rates. The policy to boost fertilizer use must be formulated in this context.

Improving smallholders access to credit

134. Abundant empirical analysis indicated that the limited use of fertilizer and other high-productivity inputs in Malawi (and other low income countries) is due to limited availability of credit to smallholders. Two issues need to be highlighted here. Firstly, as discussed in Chapter Six, sustainable macroeconomic policies will be critical to achieve a reduction in (domestic debt and) interest rates.

135. Second, there is a need to improve the credit-worthiness of smallholders. The introduction of weather-based insurance instruments is being successfully piloted in Malawi and can play a powerful role in improving smallholder access to finance. Weather insurance can facilitate farmers' access to credit and thereby allow them to purchase the inputs which can boost productivity. Banks can team up with insurance companies to provide a loan that includes insurance on weather risk based on the farmer's local rainfall index. The farmer would pay a slightly higher interest rate that includes the weather insurance premium. However, this increase is largely offset by the fact that the bank can charge a lower interest rate that comes with the decreased risk of default—since historically, the years of reduced loan-dues payments have been shown through modeling to coincide with the drought years when farmers suffered much lower yields.

136. Hess and Syroka (2005) show that an insurance product could be designed based on a maize production index constructed from weather data recorded at Lilongwe airport weather station. See Annex 7D for a more technical and detailed explanation of how weather insurance might work in Malawi.

137. Building on the work by Hess and Syroka (2005), in Malawi drought insurance has already been successfully piloted in 2005/06 among 900 groundnut farmers in four areas of Malawi, marking the first time such index-based weather insurance policies have been sold to smallholder farmers in Africa (Box 7.5). The index-based weather insurance contract has been designed in such a way that it would pay out if the rainfall needed for groundnut production was insufficient. If there is a drought that triggers a pay out from the insurance contract, funds will be paid directly to the bank to pay off the farmers' loans. If there is no drought, the farmers will benefit from selling the higher volume production in the marketplace. The insurance has helped farmers obtain financing necessary to purchase certified seeds, which produce increased yields

BOX 7.5: AN INNOVATIVE WEATHER INSURANCE PROGRAM IN MALAWI

In the 2005/06 agricultural season, Malawi introduced an innovative pilot drought insurance program for local farmers to help them mitigate the risks associated with periodic droughts. The National Smallholder Farmers' Association of Malawi (NASFAM), in conjunction with the Insurance Association of Malawi and with technical assistance from the World Bank and Opportunity International Network, designed the index-based weather insurance contract that would pay out if the rainfall needed for crop production was insufficient.

Farmers in Malawi typically have little cash and no access to finance, and thus cannot afford to purchase certified seed and other inputs. Banks are unwilling to lend to these farmers for a variety of reasons, but primarily because of the risk that farmers would not be able to repay their loans if there was drought. Farmers had no access to finance and could not afford to purchase certified seed and other inputs to increase both yield and crop value. This program provides insurance to the farmer to mitigate this risk, and therefore allows banks to channel needed resources to the agricultural sector. In other words, because of the new index based weather insurance, farmers are now creditworthy and able to secure finances needed to purchase certified seed. If there is a drought that triggers a pay out from the insurance contract, funds will be paid directly to the bank to pay off the farmers' loans. If there is no drought, the farmers will benefit from selling the higher value production in the marketplace.

By clarifying environmental affects, such as drought, with the assistance of weather stations and establishing growth periods and expectations, farmers are able to secure funds needed to purchase a more profitable seed and lenders are confident to issue loans. The weather insurance thereby secures an input credit package that allows farmers to leap to a more weather sensitive, but much more profitable crop, without the risk for livelihood and default. The policy also provides area lenders the ability to extend operations due to a new security that loans, even in the situation of extreme drought, will be paid in full. The index-based weather insurance has been well received by farmers and lending institutions in Malawi.

and revenues and possess greater resistance to disease. If successful, it may be scaled up to other crops and other areas of Malawi and elsewhere in Africa.

138. While weather-insurance contracts do not necessitate government intervention, there may be a rationale for the government to actively promote adoption of this type of instrument to facilitate smallholders' access to agricultural credit and improved adoption of fertilizer and certified seeds. For instance, in order to encourage the scaling up of this instrument, the government could invest in strengthening the infrastructure network of weather stations which is required for the entry of private sector into this type of insurance. While Malawi Meteorological Office is amongst the best in Southern Africa, there is substantial scope for expansion in the number of stations across the country.

Improving smallholder access to extension services

139. The access to agricultural extension services appears to be equitably distributed across the various income groups, with a slight bias towards farmers from the middle income households.¹⁴¹ Although there is no bias towards the richer households, however, there appears to be some bias towards larger farms. It is likely that this bias may reflect field agents' efficient prioritization of their scarce time, such that field agents choose to provide more advice to larger land owners as a way to maximize the impact of their expertise. Also, there appears to be a

¹⁴¹ This result is due to the fact that a large share of households in the richest quintile do not practice agriculture (or not as their main activity), and are therefore less likely to benefit from the extension services.

slight bias against female-headed households. Both these biases can be eliminated by providing appropriate instructions and pay incentives for field agents to channel advice to all smallholders. More important, there is a need to scale-up the role of extension services to allow all smallholders to benefit from more frequent interaction with extension agents.

Improving the functioning of maize markets

140. The analysis in this chapter has highlighted the need to separate the social protection functions presently carried out by ADMARC from its marketing and price stabilization functions.

141. The activities of ADMARC have had a negative effect on the development of the agricultural sector, and maize markets in particular. Nevertheless, the findings of the PSIA have highlighted the need to maintain the marketing functions currently provided by ADMARC in some remote areas of the country where the high transport costs and thin private markets can give rise to substantial price mark-ups compared to urban and semi-urban areas. In the short-run, therefore, the marketing functions provided by ADMARC may be beneficial in some areas that are under-served.¹⁴² The question then becomes whether ADMARC can play this function in a cost-effective manner, or if this marketing function could be done better through other market-based mechanisms.

142. The agricultural price stabilization functions should aim to minimize market disruption and foster the growth of private sector trading. The discussion above has highlighted the possibility to influence national prices by intervening only in the major 'lead' urban markets (as an alternative to setting panterritorial prices). It has also highlighted the need for an active policy to facilitate local intra-annual storage of agricultural commodities.

143. The government intention to promote the Warehouse Receipt System (WRS), recently introduced in various neighboring countries, should be pursued since this mechanism can provide a powerful solution to increase storage at the local level, while facilitating access to credit for the farmers. A warehouse receipt system can be the catalyst, not only to easing access to finance but also in promoting more efficient trade in agricultural commodities (Box 7.6).

144. The social protection functions should be explicitly addressed in the context of Malawi's social protection policy, which is discussed in Chapter Nine. Under the current policy setting that discourages maize production, and given the fast rate of population growth, food imports are

¹⁴² ADMARC markets should only be retained in remote rural areas, far from major roads, where there are less developed private markets, and alternatives to ADMARC services are less likely to exist. In areas where private market infrastructure is developed and market services function, ADMARC facilities do not appear to have any positive impact on farm households. Its services are not required in less remote areas of the country, where the activity of the private sector is already well established. Therefore, ADMARC's facilities in developed parts of the country should be auctioned off to the private sector. In the medium term, as private sector expands its marketing activities in remote parts of the country, the role for the Government to facilitate food marketing in remote areas will diminish. The Government can accelerate this process by investing in market infrastructure in remote areas, and facilitating the development of institutions that bring greater transparency and competition in market transactions. These measures will enhance private sector participation in the agricultural sector and eventually eliminate the need for the Government to support marketing services in remote areas.

BOX 7.6: WAREHOUSE RECEIPT SYSTEM: KEY TO IMPROVED CROP MARKETING

Under a WRS, licensed warehouse operators are authorized to receive deposits of agricultural commodities that meet set quality standards and issue warehouse receipts to the depositors. The receipts will contain such information as the location of the warehouse, the name of the depositor as well as the quantity and quality of the specified commodity deposited.

Where the depositor requires finance, the receipt may be submitted to a bank as security for a loan, with the bank valuing the underlying collateral on the basis of the quality and quantity information as well as prevailing and foreseeable market prices. This will, on the one hand, improve capitalization of traders and processors, enabling them to build up inventories well beyond their available capital. On the other hand, it will enable producers to hold stocks while obtaining finance for consumption and other needs, making it possible for them to sell only when prices are remunerative.

The receipts can also be used in trade transactions—the receipt when transferred to buyers will enable them take delivery of the underlying stocks without inspection. The fact that the receipt guarantees delivery of the specified quality and quantity of the commodity means buyers no longer have to carry out physical sampling or inspection of the commodity before purchase. They also no longer need to spend days/weeks in rural areas bulking up produce for transfer to other markets. The system will, therefore, reduce the cost of transacting in the agricultural trade and it can allow farmer organizations to bulk on behalf of the members and sell directly to processors, larger traders, relief agencies and other end-users. A WRS will also reduce post-harvest losses as storage will occur in well-managed warehouses and silos.

By allowing the smaller warehouses to be used as bulking facilities, WRS will enable smallholder groups to reduce the high cost of assembling crop or delivering inputs, and therefore attract traders. They will also have the option of either selling directly to traders in their communities or depositing with the licensed warehouses, with buyers facilitating arrangements for transport. The groups will also be able to bargain better since they will have access to market information, delivered via the licensed warehouses.

A WRS in Malawi can be rolled out over a period of 2-5 years and be accessible to a wide range of players, including smallholder groups, traders and processors and can provide smallholders with access to credit and thus farm inputs.

This receipt system has contributed to a buoyant, modern agricultural trade and financing system in South Africa since the sector was liberalized in the mid-1990s. The WRS has also been successfully established in Zambia in recent years. In the Malawi case, as in Zambia, development of the WRS would ideally begin with warehouses in urban locations and would initially be utilized more by the relatively larger formal traders.

likely to become an ever-increasing fiscal burden. As will be discussed below, other policy instruments that have the potential to more efficiently provide a safety net for the urban and rural poor should be explored and tested in order to eventually end the disincentives for smallholder maize production.

Improving the functioning of tobacco marketing

145. There is a need to review the sector's institutional structure to clarify institutions' mandates, align governance bodies with the sector's current stakeholders, and eliminate elements of conflicts of interests. The government should also proceed to establish the Competition Commission in line with the existing law, and entrust the Commission with monitoring the sector's monopolies/ oligopolies on a regular basis.

146. In parallel, there are opportunities to strengthen institutional capacities and accountability in the sector institutions: the Ministry of Agriculture, TCC, AHL, ARET and the farmer associations (with a particular emphasis on TAMA). It must be stressed that each institution is to be treated in its own individual merit in order to attain sustainable solutions in ridding each of these institutions of their inefficiencies.

147. The government should also continue to implement measures to reduce marketing costs and improve pass-through to farmers through contract farming/ direct exports and bringing efficient markets closer to the farmers. One channel through which this can be done is promoting the use of contract farming and direct exports. Contract farming allows farmers to manage price risk and to have access to inputs/credit and advisory services; it also allows producers to have direct contact with increasingly difficult international markets and produce what the market dictates. A pilot contract farming operation should be launched for burley tobacco and a review of the successful pilot contract farming operation for flue cured tobacco should be carried out to strengthen producers' bargaining power (information/advice) and to get rid of the requirement of going through the auction floor (it is technically feasible and would reduce the delays at AHL).

148. In an effort to bring the markets closer to the farmers, serious consideration should be given to piloting "Local Commodity Exchanges" (LCE) at the district level where producers and buyers would carry out direct competitive physical transactions. LCEs could be opened in every district to focus on tobacco (or handle several crops), and would be owned/managed, under TCC guidelines/monitoring, by private entrepreneurs (with adequate qualifications) to provide the necessary guarantees (private ownership would have the advantage of ensuring private financing of investment costs).¹⁴³ LCEs should be open to any 'eligible' buyer, not only to the buyers active on the AHL auction floor (where there is an amount of price fixing). The buyers would then have a choice of either selling the crop through AHL auction floor or direct export. The presence of several (20 or more) buyers would permit competition and transparent price discovery, thus protecting the producers. Payment to the smallholders would be immediate. LCEs would fund their operating costs through a fee on throughput. The TCC would play a big role here by controlling transactions, auctioning LCE licenses and licensing buyers according to strict criteria. Such a scheme would ease several critical existing constraints and offer many other advantages although it would not solve the problem of cartels on the auction floors. While at present there would appear to be significant institutional capacity and governance constraints in developing a large number of fair marketplaces across the country, it should be possible to start a pilot in several districts, and aim to refine the design and expand the number of local commodity exchanges over time.

¹⁴³ An LCE is essentially a decentralised auction with mobile teams of auctioneers and buyers working exactly as they would on the main auction floors, but mobile. This type of marketing arrangements for agricultural commodities has been adopted successfully in several countries.

CHAPTER 8: POVERTY AND TRADE IN AGRICULTURAL COMMODITIES

INTRODUCTION

1. Trade is a key engine that can drive economic growth and reduce poverty. International experience has shown that those households working in the production of tradable goods generally fare better, and that increasing participation in this type of production will bring pro-poor benefits to the economy. The 2003 Diagnostic Trade and Integration Study provides a detailed analysis of the potential for, and constraints to, trade in Malawi (DTIS, 2003). Given the prominence of agricultural activities in the livelihood of the (rural) poor in Malawi, here we build on the analysis carried out in the DTIS study, focusing on the potential of using trade in agricultural commodities as a mechanism for poverty alleviation. As we saw in Chapter 4, participation in commodity crop production in Malawi is indeed associated with higher income levels, through this does not translate into nutritional benefits. As such, the policy recommendations in this chapter to boost cash crop production by small holders must be complemented by the policies outlined in Chapter 9 to improve nutritional outcomes and feeding practices as part of the social protection framework.

2. The chapter examines how poverty is related to export market participation in Malawi and explores ways that cash crop production can be boosted as a poverty alleviation mechanism. It begins by quantifying income gains from participation in export agriculture, in the form of the differential return in exportable commodities (mainly tobacco and cotton), vis-à-vis subsistence activities (i.e., food production). Then, we link these income gains to specific constraints in agriculture; mainly infrastructure variables and household determinants. This allows us to identify which constraints prevent farmers from entering in the production of export commodities and thus in earning higher cash income and in escaping poverty. There are two sets of determinants of commercialization that we explore: micro-determinants at the household level, and more aggregate determinants at the village level. Having identified these links, the final section then suggests broad guidelines to assess policies conducive to poverty reduction.

EXPORT PARTICIPATION, COMMODITY EXPORTS GAINS AND POVERTY

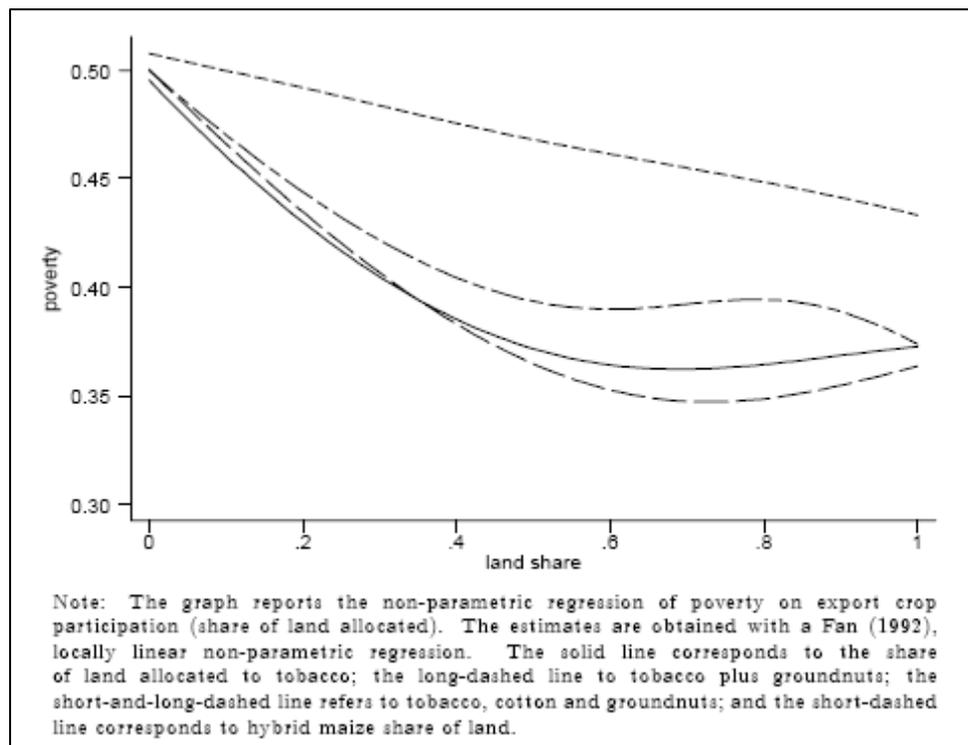
3. Our main hypothesis is that households can escape poverty by devoting resources to high-yield, export-related crops, instead of food crops for home consumption. Household production of food for own-consumption is a characteristic of low income countries, as in the case of Malawi, where subsistence agriculture is widespread. In switching from subsistence agriculture to market-oriented crops, higher proceeds often associated with sales of export crops, mainly tobacco and cotton, allow households to buy the food, rather than produce it themselves, and to enjoy additional disposable income. To test our hypothesis, in this section we will demonstrate the link between poverty and the production of exportable crops, and then we will quantify the gains (in monetary terms) of producing the latter crops.

4. In Malawi, the major export crops such as burley tobacco and cotton are usually considered high-yield crops, because they are more profitable than subsistence crops produced

for home consumption.¹⁴⁴ Hence, we expect households engaged in export markets to be less likely to be poor than households restrained in subsistence agriculture. If it is true that export commodities are more profitable than subsistence activities, then promoting entry into export market should be a plausible policy recommendation, especially in terms of poverty reduction.

5. In order to establish a relationship between poverty and export cropping, we estimated non-parametric regressions of the poverty indicator of the household on the share of land allocated to various definitions of export crops (Fan, 1992; Pagan and Ullah, 1999). It is important to understand that these regressions do not establish causality; rather, they are a descriptive technique to describe the association between two variables.

Figure 8.1: Poverty and cash crops



Source: Own calculations using IHS2 data

6. The results are shown in Figure 8.1. The solid line represents the relationship between poverty and the share of land allocated to tobacco. We then broaden the definition of cash crops: the long-dashed line corresponds to the share of land devoted to tobacco plus groundnuts, and the short-and-long-dashed line to tobacco, groundnuts and cotton. Using these three definitions, we find support for the claim that higher participation in export cropping and agriculture

¹⁴⁴ Throughout this chapter, we interchangeably use the terms commodity exports, export crops, high-yield crops, commercialized crops, or cash crops, mainly referring to tobacco and cotton. Sugar cane, tea and coffee are also cash crops produced in Malawi, but these are mainly grown by large estates. Therefore, for smallholders, they are of much less importance than tobacco or cotton, and there is no sufficient data to take them into account in our analysis. On the other hand, the terms food crops for own-consumption, or subsistence agriculture, refer to crops such as maize, cassava, potatoes, groundnuts, beans, millet, sorghum, and others grown by the household for their own use.

commercialization is associated with lower poverty. Indeed, the graph shows a strong negative correlation between these variables, particularly for households with low levels of participation. This means that households that are not engaged at all in export agriculture are likely to be poorer, on average, than households that are increasingly participating in export crops. Notice that the relationship eventually flattens, thus indicating that further specialization in export crops is not necessarily associated with lower poverty (although it can still be associated with higher income and expenditure – see below).

7. Interestingly, adding groundnuts to tobacco does not change the overall association between export commercialization and poverty in a significant way. In contrast, the addition of cotton does. Overall, for a given share of land allocated to these crops, it seems that households engaged in cotton are likely to be poorer than households engaged in tobacco production. One interpretation of this finding is that cotton may have a lower return than the other two cash crops. But, since the analysis does not establish causality, other explanations may be advanced as well. For instance, it could be that households produce cotton in some regions of the country that happen to be endowed with less fertile land or lower infrastructure. Nevertheless, the key point stands: there is strong negative correlation between poverty and export crop participation.

8. To further test our hypothesis, it is helpful to examine the relationship between poverty and hybrid maize, a locally commercialized crop. The short-dashed line in Figure 8.1 shows the relationship between hybrid maize land shares and poverty. This relationship is negative as well, indicating that agricultural commercialization is also correlated with lower poverty. Notice, however, that this relationship is much weaker than in the export crops discussed above.

9. Even though the previous graph just shows (unconditional) correlations between the variables, we can speculate that switching from own-consumption crop production to commercialized cash crops, helps reduce poverty. Furthermore, it seems that production of export crops have a much higher impact on poverty than locally-traded cash crops, such as hybrid maize. We explore this hypothesis next.

Income Gains in Commodity Exports

10. In this section, we characterize the income gains associated with export commodities. Specifically we estimate the income differentials from export cropping when compared to the production of own-consumption goods. Conceptually, two sets of households were compared i.e., one that produces for subsistence and another that produces for the markets. The measure of returns to different agricultural activities is the yield per hectare, net of inputs. This measure has been calculated using IHS2 data on the value of outputs and inputs used for different crops, as well as on the land allocation. By netting out inputs, we can be confident that our measure of return reflects profits. Also, by dividing by land allocation, we have a comparable unit of measure across crops.

11. The results are presented in Table 8.1. When switching from subsistence to tobacco production, the (net) income gain per hectare is, on average, 53,216 MK. This result implies that if a subsistence farmer decides to grow tobacco and allocates to this crop a plot equal to the average tobacco allocation (of around 0.3 hectares), the actual average gain would be 15,965

MK. This gain is equivalent to 18.3 percent of the annual total expenditure of a typical household in rural areas. Secondly, we include groundnuts into the definition of export crops. The results remain basically unchanged. The actual income differential when compared to subsistence farming is somewhat higher, reaching around 19.4 percent of the total expenditure of an average rural household.

Table 8.1: Export Cropping and Income Gains

	Gains per hectare	Average Gain	
	(in MK)	(in MK)	(as % of hh expenditure)
Tobacco vs. subsistence maize	53,216 (13,204)	15,965	18.3
Tobacco & groundnuts vs. subsistence maize	56,242 (12,107)	16,873	19.4
Tobacco & cotton vs. subsistence maize	41,560 (7,501)	12,468	14.3
Tobacco vs. hybrid maize	44,559 (16,032)	13,368	15.4

Note: Standard errors in parentheses.

The Gains per hectare show the increase in household income if an additional hectare of land is switched from subsistence to export crops. The average gains are computed assuming the switching involves an allocation of land to the export crops equal to the average current allocation. The last column shows the average expected gain as a share of total household expenditure.

Source: World Bank staff calculations, based on IHS2.

12. When cotton is included into the definition of export crops instead of groundnuts, the income differential vis-a-vis subsistence farming is lower than that for tobacco growers alone. This is consistent with the finding in Figure 8.1. The average gain of growing the export crop plot (tobacco and cotton in this case) is slightly over 12,000 MK which, in turn, represents 14.3 percent of the average annual total expenditure in rural areas. Lastly, we compared the net per hectare yields of tobacco growers against hybrid maize growers. Hybrid maize growers switching to tobacco are expected to increase their yields by 44,559 MK on average.¹⁴⁵

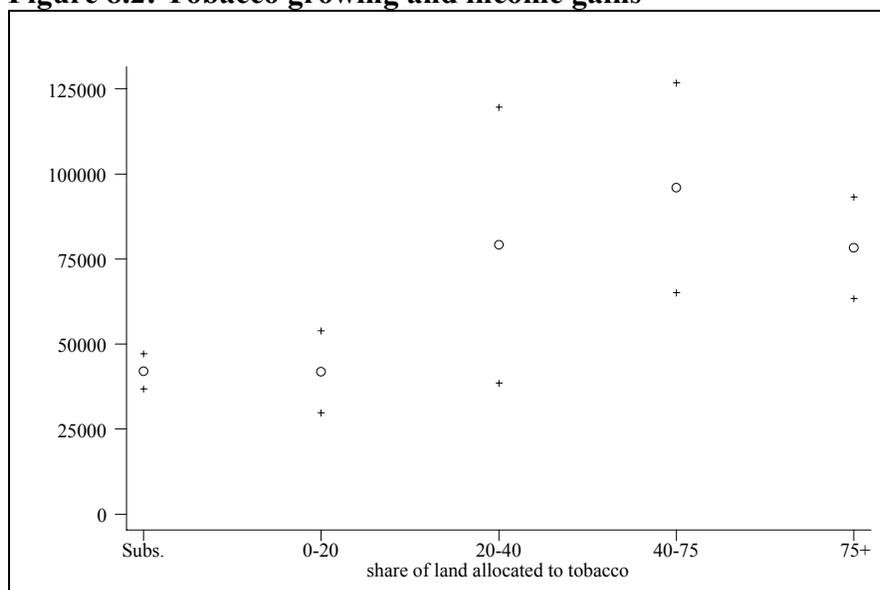
13. The results show that there is a substantial margin to improve the poor farmers' welfare in promoting a change from subsistence to export-oriented agriculture. Notice that the actual gains will depend on the fraction of land allocated to the export crop.

14. We also estimated the average income gains of different types of export growers (tobacco growers) depending on their degree of specialization (vis-a-vis subsistence farmers). Households were divided by the share of land allocated to tobacco to form 5 categories: subsistence farmers (tobacco share of land equal to zero), tobacco growers with a share of land of more than zero but less than 20 percent, from 20 to 40 percent, from 40 to 75, and from 75 to 100 percent. For households in each of these different categories, we compared the estimated average income differential.

¹⁴⁵ We have also estimated the income gain per hectare from producing hybrid maize instead of subsistence farming, and this gain is positive though not statistically significant.

15. The results are presented in Figure 8.2 below. We find an increasing yield per hectare as the farmer becomes more specialized on tobacco. Notice that there is no difference in the outcome if the household switches to tobacco on only a small fraction of available land. The yields per hectare start to increase when the farmer devotes more than 20 percent of land (in terms of land area, this represents, on average, roughly 1.5 acres for a typical tobacco grower).¹⁴⁶ For the top two categories (40-75 percent and 75-100 percent), the expected yield is higher than for any of the previous three categories, and the differences in outcomes with the purely subsistence and the 0-20 groups are statistically significant. Note also that the gain in yield per hectare is in line with that estimated in Table 8.1. Our main conclusion remains the same: there is room for improvement on poor farmers' welfare and these gains increase with greater participation in tobacco production. It seems that some level of specialization above a minimum threshold is required to realize the gains but that full specialization is not actually needed.

Figure 8.2: Tobacco growing and income gains



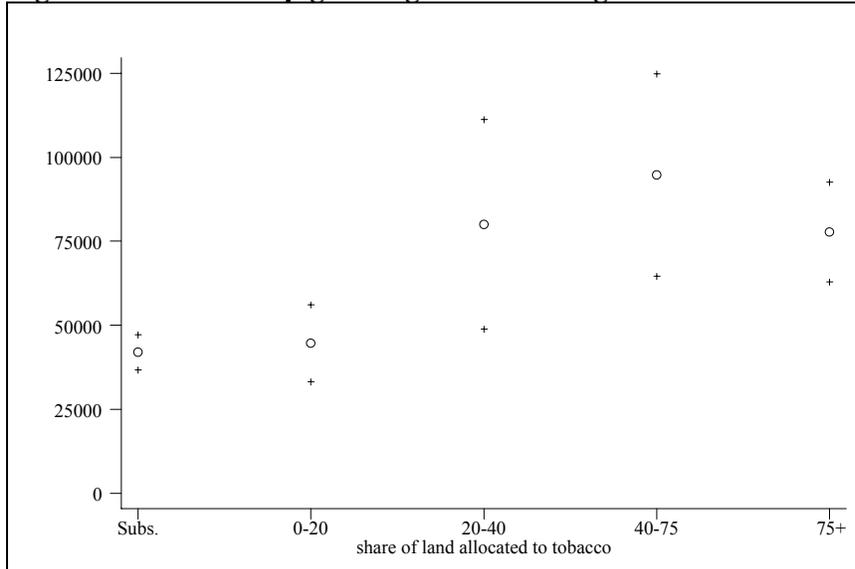
Note: The graph reports the average outcomes (90 percent confidence interval also reported) after sub-classifying on the balancing score to adjust for covariate differences across categories. Categories: subsistence farmers (tobacco share of land equal to zero), cash crops growers with a share of land of more than zero but less than 20 percent, from 20 to 40 percent, from 40 to 75, and from 75 to 100 percent.

Source: World Bank staff calculations, based on IHS2

16. Lastly, we re-run the exercise, including groundnuts in the definition of cash crops. Figure 8.3 depicts the results of this exercise. The results remain unchanged and the magnitudes of the gains are more or less the same as in Figure 8.2. Overall, it seems that tobacco is the key crop associated with higher net yield and income gains. Importantly, the standard errors of the gains in Figure 8.3 are smaller; one reason may be the increased number of observations now included into each category.

¹⁴⁶ Notice that for the 20-40 percent category, the differences with the first two categories are not statistically significant.

Figure 8.3: Cash crop growing and income gains



Note: The graph reports the average outcomes (90 percent confidence interval also reported) after sub-classifying on the balancing score to adjust for covariate differences across categories. Categories: subsistence farmers (tobacco & groundnuts share of land equal to zero), cash crops growers with a share of land of more than zero but less than 20 percent, from 20 to 40 percent, from 40 to 75, and from 75 to 100 percent.

Source: World Bank staff calculations, based on IHS2

Constraints to Household Participation in Agricultural Export Commodities

17. The higher returns observed in export agriculture raise the question of why farmers do not switch to the more profitable activity. Part of the differential return surely reflects special attributes required to produce for exports such as skills. However, another part may be due to large distortions in the economy. Indeed, in addition to specialized knowledge, entry into commodity export markets usually requires credit, start-up capital, infrastructure, and labor supply. With imperfect markets, wide margins in the returns to export agriculture and to subsistence agriculture may arise in equilibrium between otherwise similar households. Faced with higher tobacco prices, for instance, some farmers may be unable to enter markets if they do not have sufficient credit or wealth to cover any start-up costs (e.g., seeds, fertilizers). Similarly, faced with higher prices of the export crops, farmers may be unable to expand current export crop production if family labor supply is limited or if rural labor markets are thin.

18. In this section we explore the main determinants of participation into export commodities, and attempt to identify key constraints to agriculture that may prevent farmers from entering high-return markets.¹⁴⁷ We begin with a description of the theoretical determinants of commercialization, as a basis for an empirical analysis of export participation in Malawi.

19. An important factor determining farmers' allocation of resources to commercialized crops is the trade-off between profitability and risk, as in a standard portfolio allocation choice (Rosenzweig and Binswanger, 1993). Thus, relative product prices and input prices affect the

¹⁴⁷ This section is based on Brambilla and Porto (2005).

choice of crops. It may be argued that cash crops show higher returns but are riskier than food crops, so that different attitudes towards risks (degree of risk aversion) can help explain the selection (Binswanger and Sillers, 1983; Dercon, 1996; Shahabuddin et al., 1982).

20. Growing cash crops often requires a start-up, lump sum investment that may constrain the allocation of resources. For example, there might be the need for initial capital investment in machines, tractors, animals, or initial input purchases such as new seeds or expensive pesticides or sprayers (Eswaranand Kotwal, 1986; Dercon, 1996). In the presence of well-developed credit markets, these fixed costs could be easily covered. When credit constraints are binding, however, the ability to borrow and the availability of collateral can be determinants of the choice of crops.

21. An additional important argument claims that the allocation of resources is affected by missing markets (de Janvry, Fafchamps, and Sadoulet, 1991). In fact, whereas cash crops must be sold at the market price, food crops can be consumed in the family to provide food security. In many less developed countries, concerns for food security are of the utmost importance. Families will want to secure the food needs of the family first, and then move to cash cropping. If food markets were well-developed, then food risk would not be an issue because households could grow cash crops, sell them at the market, and use the proceeds to purchase food. If food markets are missing or are thin and isolated (so that *ex-post* food prices are high and volatile), then a strategy of self-sufficiency in food production may be optimal (Fafchamps 1992; Jayne 1994).

22. The decision to cultivate tobacco and other cash crops is analogous to the choice farmers make in adopting new technology, such as high-yielding varieties and fertilizer. As discussed in Chapter Seven, there is a large literature that explores the determinants of technology adoption in agriculture. In addition to the important role of risk and credit, this literature identifies human capital (measured by education, gender, and age) as a major determinant of technology adoption. In addition, social capital, learning by doing, and learning externalities are also important determinants.

23. A final argument is made about the health status of the family (Collier and Gunning, 1999). The theory is that a healthier family will be able to be more productive in cropping, thus allowing for higher shares of land in marketable crops (or deriving higher share of income from sales of these crops). Further, the health status of different members may affect the cropping decision in different ways. For instance, many agricultural activities, particularly in food cropping, lie in the hands of the women. Men, instead, may concentrate in export cropping or in marketing (i.e., taking production to the district centers or the road stalls). Consequently, the health status of males and females can have different implications for the allocation of land. Also, the health of the kids (and the number of kids) may also determine the effort allocation of mothers, and thus of agricultural activities.

Results of the analysis of determinants of agriculture commercialization

24. The empirical analysis of the determinants of agriculture commercialization in Malawi is based on modeling the share of land allocated to tobacco by each household, as a measure of commercialization or export participation. The model can be specified as follows:

$$[8.1] S_{hc} = z'_{hc} \beta_s + \delta_s I_c + \varepsilon^s_{hc}$$

where S_{hc} is the share of land allocated to tobacco by household h in community c , and where we include two sets of repressors for household controls, z , and district controls, I_c . To acknowledge the fact that the share of land allocated to tobacco is censored at zero, we estimate the model as a Tobit model. Summary results for the model are presented in Figure 8.4 (see Annex 8A for details of the methodology and detailed results).

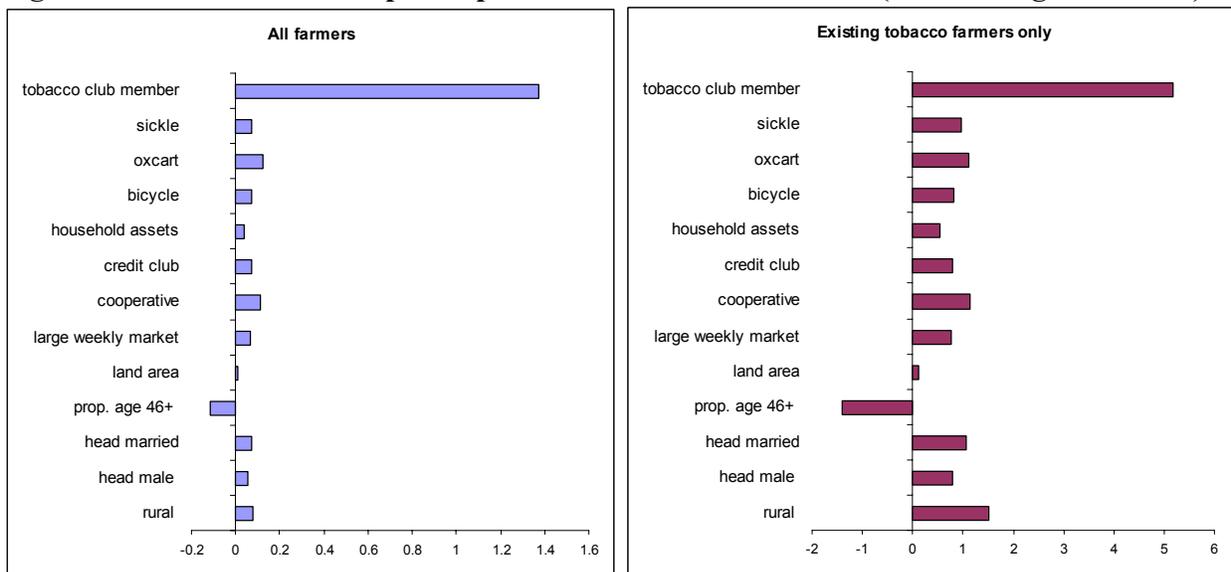
25. To simplify the discussion of the results, we only report the marginal effects evaluated at the average values of the regressors (only for those variables that are statistically significant at the 5 or 1 percent level). The graph on the left panel refer to the change in the average share of land allocated to tobacco for all Malawi farmers and the graph on the right, to the change in the average share of land allocated to tobacco only for those already producing tobacco. One way to think about the difference is as follows: the latter coefficient would indicate the response of tobacco production if subsistence farmers were prevented from adopting tobacco; in contrast, the response in left-hand side graph measures the marginal effect for all farmers, including those who were not participating to begin with. Notice that, in general, the unconditional marginal effects (all farmers) are much smaller than the conditional marginal effect (current growers only), because the unconditional effects average across a larger number of producers, including those with zero shares. However, in spite of the smaller size of the coefficient for the unconditional, the total supply response will be much larger, because of the much larger size of the population responding to the effect. For example, becoming a member of a tobacco association (tobacco club member) would increase total land shares by 1.375 for all farmers, but only by 0.518 if supply responses of non-producers are not allowed (i.e., counting only the approximately 10 percent of farmers already producing some tobacco). Similarly, having an oxcart would increase land shares by 0.125 (with supply responses, or all farmers) and by 0.112 (without supply response, or current growers only).¹⁴⁸

26. The results indicate that household characteristics do matter. For instance, having a male head of household has a positive effect on the share of land allocated to tobacco. The marital status of the household head is also important: the tobacco share of land is greater when the head is married. Household size has a positive, though weak effect (additional models shown in Annex 8A show a higher impact). This result is in line with the hypothesis that larger households have a larger labor supply, and thus face lower constraints to commercialization. On the other hand, it could be argued that larger households will try and secure food needs before engaging into commercialization. However, we also need to take into account the household structure.¹⁴⁹

¹⁴⁸ As a rule of thumb, one can compare the unconditional marginal effects in columns A to 0.1 times the conditional marginal effects in columns B.

¹⁴⁹ For example, in terms of labor supply and food security a household with 8 members of which 6 are 8 years old or less is completely different than a household with 8 members of which all are over 18 years old.

Figure 8.4: Determinants of participation in tobacco: land share (Tobit Marginal effects)



Note: The graphs include only those variables that are statistically significant at a 5 or 1 percent level. Land area is defined in hectares. The remaining variables (tobacco club member, sickle, oxcart, bicycle, household assets, credit club, cooperatives, large weekly markets, head married, head male and rural) are all dummy variables.

Source: World Bank staff calculations, based on IHS2

27. The regressions include a full set of demographic composition variables. These variables represent the proportion of household members in different age brackets (age 0-7, 8-12, 13-18, 19-46, 46+). The omitted category in the regression is the proportion of members between 18 and 45 years old. The way to interpret the coefficients for age composition of the household is as follows. If, for example, the coefficient of prop. age 0-7 is negative (positive), this should be interpreted to mean that raising the share of household members aged between 0 and 7 years old, and at the same time decreasing the share of members in the 18-45 category by the same amount, while holding the rest of the household age shares constant, will decrease (increase) the share of land devoted to tobacco. The results are as expected. Substituting adults between 18 and 45 years old with either younger or older members has a negative effect on the share of land. Two forces are in play in the same direction. Having more children raises the food security concern, and at the same time restricts the available labor force, therefore, limiting commercialization activities.

28. Changing the proportion of males in the household does not seem to have an effect on export activities after controlling by household size and age composition. This may indicate that women are also engaged in the production of tobacco. There is also no clear association between commercialization and the education or literacy status of the head. One possible explanation is that education is low across the rural population, so that there is not sufficient variability to capture the effects of education.

29. It is surprising to find that the health status of the household (measured as the proportion of sick members) does not seem to affect the decision to participate in export activities. This is also true for the health status of the household head. This evidence does not support the notion that sick members, including the head, reduce effective labor, or that sick children compromise

the effort of the women in agriculture. The reason may be that these variables can not distinguish between chronic and short-term sickness.

30. Possession of household assets like beds, table and chairs, fan, radio, etc. is positively associated with the decision to engage in cash crop production. The possession of agricultural tools, like a hoe or sickle, also has a positive effect. An interesting result is that the existence of food markets in the village is associated with higher export agriculture. This evidence supports the hypothesis of de Janvry et al. (1991). If food markets are thin, households will be reluctant to engage in commercialization and be at the mercy of potentially high prices in the presence of low food supply. In this case, farmers will choose to focus on food production for home consumption. Instead, if food markets are available, households may face, in the end, a lower risk of engaging into export crops.

31. Also, we find that the presence of ADMARC markets has no effect. One might have expected that ADMARC would feature in tobacco cropping decisions to the extent that it serves as a potentially important food sources for local tobacco growers. However, this result is not surprising, given that ADMARC was no longer playing a role as a buyer of agricultural produce (World Bank 2004).

32. There is a strong positive relationship between the share of land allocated to tobacco and membership to tobacco clubs. If the farmer is a member of such a club, the share of land devoted to tobacco increases significantly. Club membership measures an aggregate effect, and additional analysis shows that the major benefits members receive from participation in a tobacco club are access to credit,¹⁵⁰ and access to transport and markets where the farmer can sell his or her produce.

33. The district road variables included in the regressions seem to have little impact on our measure of commercialization. This is true for two different measures of road infrastructure: dummies for different types of roads, and distance to asphalt road in kilometers. This does not mean that roads are not important, *per se*. Rather, the right interpretation of the sign and significance of the road dummies is that the type and quality of road has little or no effect on participation.

34. Although we found no effect of different type of road access and distance on the share of land allocated to tobacco, we do find that access to transport of bales to the market is linked to higher participation in export agriculture. This is an important result, because it suggests that the presence of intermediaries linking farmers with markets facilitates participation. In other words, these services create markets for cash crops and act as impulses towards participation. This conclusion is consistent with our findings regarding market costs in export agriculture reported in Balat and Porto (2005). Reinforcing this finding is the result that owning a bicycle or an oxcart also has a positive effect on household participation. These two means of transport are used by tobacco farmers to carry their produce to the selling point. This indicates that even though we don't find a positive effect for different types of access to roads, we do find positive and significant effects of services related to transport.

¹⁵⁰ This gives us a sense that not only having credit available, but having met the requirements to obtain a credit plays an important role.

35. In sum, the type of road access that the farmer have does not seem to be a great constraint to agriculture, provided there are roads (asphalt, graveled, or maintained) and provided farmers are endowed with tools to reach the selling points, have access to intermediaries or other marketing channels, and have transport facilities through, for instance, tobacco clubs.

36. Additional models using different specifications have also been estimated, and the results do not vary substantially from the ones presented here. Worth mentioning, however, is that when we used the total land plot area as the dependent variable (instead of the land share devoted to tobacco), the results indicate that the size of landholdings has a very small impact on commercialization. Specifically, the coefficient suggests that each additional acre only increases the likelihood of participating in tobacco production by about 1.5 percent (see Annex 8A).

ASSESSING THE IMPACT ON POVERTY OF REMOVING TRADE CONSTRAINTS

37. The analysis in the previous section highlighted that access to food markets, access to credit (for inputs), and access to transport are the key constraints that may prevent greater smallholder participation in commercial crops. These constraints prevent farmers from entering high-return markets, thus locking them into poverty. They highlight the importance of policy interventions that facilitate participation in trade. For instance, measures should focus on facilitating risk mitigation and access to credit, provision of start up capital, provision of easily accessible markets, and improving the health status of the individuals.

38. In promoting a switch to cash-crop farming for small holders in Malawi, our finding in Chapter 4 that the higher income levels enjoyed by cash crop farmers is not accompanied by decreases in chronic malnutrition must be addressed. It is therefore paramount that cash-crop promotion policies go hand in hand with policies to improve childhood nutrition and improved feeding practices through nutrition education programs.

39. Our findings in this chapter are consistent with the analysis carried out as part of the 2003 Diagnostic Trade Integration Study (DTIS 2003). Using data from the IHS1, the DTIS study run simulations to illustrate the impact of addressing some of these constraints on the overall welfare of the households (thereby allowing them to participate in trade). Specifically, the study presents the results of simulations of the impact of (i) a reduction in transportation costs; and (ii) an increase in provision of fertilizer.

40. Regarding transport costs, the 2003 DTIS found that simulating a reduction in transport margins by 25 percent would lead to an improvement in household welfare by 2.2 percent. The study also found that the poorest households enjoyed disproportionately higher benefits than those better off. This indicates that if the transport costs are reduced, more poor households will benefit the most, thereby reducing poverty. Poor households capture a greater percentage of income gains when transport margins are reduced for purchase of consumption items, inputs for crops and for the marketing of their produce. In addition, there may be additional benefits such as the greater use of markets by households which, in turn, will encourage the use of more efficient production techniques, and induce farmers to break out of the cycle of subsistence farming if their risk adversity decreases. More dramatic transport price declines would bring yet

greater benefits to both the consumers and the producers. The decline in transport costs will also enhance the competitiveness of Malawi's exports more generally.

41. The 2003 DTIS also simulated the impact of providing free farm inputs to a quarter of the total population. It was found that incomes would increase by 11 percent for the lowest income groups and 4 percent for all households on average. This simulation suggests that if fertilizer prices were reduced substantially for all farmers, regardless of what they produce overall welfare impacts would improve substantially.

CHAPTER 9: SOCIAL PROTECTION AND DISASTER MANAGEMENT FOR POVERTY ALLEVIATION AND GROWTH IN MALAWI

INTRODUCTION

1. More than half of the population in Malawi lives in absolute poverty, unable to reach a subsistence level of income. In this context, it is difficult to envisage a workable social assistance program that provides direct transfers to all the poor. Nevertheless, there are several compelling reasons to consider some form of safety net transfers and social protection.
2. With a population growth rate of 2.5 percent, Malawi would need GDP growth rates of 5.8 percent to prevent an increase in the number of poor under a distributionally neutral growth scenario (Smith and Subbarao, 2003). Based on projections of current performance and historic growth levels, it seems unrealistic that growth alone will adequately improve the incomes of the poorest within a reasonable time frame. Social protection can serve as a springboard that allows households to take advantage of opportunities for wealth creation (productivity-enhancing safety nets) while protecting against risk-induced hardship, thus breaking the poverty trap for the chronically poor. As such, social protection should be part of a strategy to promote economic activity and invest in future growth. Moreover, there is evidence that improving equity by redistributing resources from the richest to the poorest can be good for growth (World Bank, 2005a): more egalitarian countries may in fact grow faster than less egalitarian ones.
3. In addition, social protection systems can prevent the erosion of human or physical capital that accompanies extreme poverty. Short-term crises especially can lead to loss or degradation of household assets, and long-term detrimental affects to wellbeing. The most frequent and severe shocks identified in Chapter Three relate to food crises, and the impact of chronic illness on households, especially those associated with HIV/AIDS, and the design of an effective social protection system for Malawi will need to address these vulnerabilities.
4. This chapter reviews the current system of social protection in Malawi, and explores ways to strengthen and expand it. The next section reviews the social protection programs currently operating in Malawi, and discusses to what extent they address chronic poverty, transient poverty, and risks. Following the review of existing programs, the chapter summarizes the main shortcomings which need to be addressed in any reform of the social protection system. The final section summarizes the main recommendations for a reform of the social protection system, based on the findings in the first part of this poverty assessment, and the review of current social protection programs in Malawi.

A REVIEW OF THE EXISTING SOCIAL PROTECTION SYSTEM IN MALAWI

5. Malawi has a complex system of safety nets programs, each operating independently and varying over time. Recognizing the limitations of the existing system, Malawi's Cabinet adopted a National Safety Net Strategy (NSNS) in 2002, to rationalize the many competing programs into a centrally coordinated, government-directed and nationwide program. The strategy had four main components: Public Works Program (PWP), Targeted Inputs Program (TIP), Targeted

Nutrition Program (TNP) and Direct Transfers Program (DTP). The Safety Nets Unit (SNU) was established in the Office of the President and Cabinet to coordinate rationalization and prioritization of safety nets through four technical sub-committees; one for each of the four types of safety nets (PWP, TIP, TNP and DWT). Three broad areas of intervention for the safety nets system were identified: welfare support interventions, productivity enhancing interventions, and improving disaster management. The sub-committees have been meeting to discuss the scaling up and down of various safety nets programs.¹⁵¹

6. However, progress in rationalizing and prioritizing safety nets interventions has been limited. The January 2005 report on "Review of the Safety Nets Programs for 2003/04" concludes that there has been little progress in improving the coordination and rationalization of Safety Nets programs in Malawi, and decisions on the various programs are still not coordinated by the government (Box 9.1). Competing programs still need to be rationalized with respect to coverage and modalities. Partly this is due to the poorly coordinated position of donors, which is expressed in a broad array of relatively uncoordinated safety net instruments. Partly this is also the result of weak government capacity and the lack of an overall vision for social protection. The government is aware of the difficulties and is adopting an inclusive process to build a framework for a coherent national strategy, rationalizing the implementation of various safety nets programs.

BOX 9.1. SELECTED FINDINGS OF 2005 REPORT ON IMPLEMENTATION OF SAFETY NETS

The report reviews the plethora of safety net programs operating in Malawi, and highlights the lack of progress in rationalizing and prioritizing safety nets interventions. Some of the findings of the report include:

- There continues to be lack of coordination in the design and implementation of safety nets programs. For instance, there are a number of different agricultural input distribution programs by various NGOs, with different modalities and often overlapping areas of interventions. The same is true of the many different types of PWP.
- Most Local Assemblies are overwhelmed by the number of separate public works programs, such that there is lack of capacity to effectively supervise all programs at district level.
- A number of organizations involved in safety nets tended to duplicate efforts, in some cases working in the same area and implementing same type of activities.
- The proliferation of PWPs by various players led to reduced attention to the various programs affecting their efficiency and effectiveness.

The report makes the following concluding recommendations:

- Organizations working on various safety net programs need to synchronize their programs at district level to avoid duplication. There is a need to have a clear structure at district level that will coordinate safety net programs to avoid having *ad hoc* type of programs which are likely to have little impact in isolation yet they have potential of having significant impact if they combine efforts.
- There is a need to have rationalized and synchronized targeting mechanism to make the whole system transparent and effective. In communities where there is more than one organization involved in safety net programs, there are sometimes some households receiving assistance from more than one organization yet others do not get anything from any organization. Programs should develop a set of information which various organizations can use other than having each organization having to develop its own data set.
- Where there are several donors working in the same district, efforts should be made to encourage coordination, especially at district level, in order to improve the effectiveness of the various programs.

Source: Kambewa, P. (2005).

¹⁵¹ For example, as recommended in the NSNS, the PWP has been scaled up in recent years. Further, a study to look

7. The discussion below focuses on the three main safety nets programs that are currently active, namely the TIP, PWP, and TNP.¹⁵² The fourth program identified in the NSNS, namely of direct cash transfers to the destitute, has not yet started. Table 9.1 shows the receipt of benefits from these programs, as well as several others, as reported by households in the IHS2 for each of the three years preceding the survey. As is apparent from the table, large scale in-kind food distribution has become an almost permanent feature of the safety nets system (even though it was originally envisaged exclusively as a response to natural disasters). Similarly, the provision of subsidized food via ADMARC continues to be a mainstay of the government's policy to combat food insecurity (even though it is not envisaged under the safety nets strategy). As a result, in recent years the most prevalent programs in the social protection scheme of Malawi consisted of (a) subsidized/free food distribution, (b) public works, and (c) subsidized/free agricultural inputs. Only sporadic initiatives have been undertaken to increase the capacity of communities and families to deal with HIV/AIDS.

Table 9.1: Receipt of program benefits (percent of IHS2 households reporting)

	2001	2002	2003	At least once 2001-2003
<i>Free food distribution</i>				
Free food/maize distribution	10.0	15.1	12.5	26.5
Free distribution of <i>likuni phala</i> (TNP)	2.5	3.3	3.6	7.0
Supplementary feeding	0.4	0.7	0.8	1.4
<i>Subsidized/free agricultural inputs</i>				
Starter pack, rainy season (summer TIP)	31.7	36.8	40.5	54.1
Starter pack, <i>dimba</i> season (winter TIP)	1.8	2.6	3.6	5.5
Other free agricultural inputs	0.2	0.3	0.6	0.9
<i>Public works</i>				
Food/Cash-for-work (PWP)	1.0	1.8	3.5	5.5
Inputs-for-work program	0.2	0.4	0.6	1.0
<i>Direct cash transfers</i>				
Direct cash transfers	0.0	0.0	0.0	0.1
<i>Education bursary programs</i>				
Scholarships/bursaries secondary	0.1	0.1	0.1	0.2
Scholarships/bursaries tertiary	0.0	0.0	0.1	0.1
Tertiary loan scheme	0.0	0.0	0.0	0.0
Other education bursaries	0.1	0.1	0.2	0.2

Source: National Statistical Office, IHS2

Direct Food Transfers and subsidized food sales

8. Direct food transfers include: food aid programs, targeted nutrition programs, school feeding programs, supplementary feeding programs (and subsidized maize sales, mainly through ADMARC, which we do not discuss here).

Food Aid Distribution

at an appropriate wage rate for all PWPs was carried out although its recommendations are yet to be implemented.

¹⁵² The IHS2 questionnaire asked about the participation in safety nets programs (TIP, PWP, and TNP programs, among others) for 2001, 2002 and 2003. Because the field work for the survey began early in 2004, 2003 was the latest year for which complete annual information could be collected.

9. While direct food relief was originally envisaged in the NSNS only as a response to natural disasters, during the last few years it has become a permanent feature of Malawi relief interventions to assist food-deficit households (i.e., the ultra-poor). Food relief in Malawi is provided through several programs. The largest program is one of general food distribution, managed by WFP, usually entailing the distribution of 50 kilogram bags of maize (and 10 kilograms of pulses and 3.7 liters of vegetable oil) distributed per month for a set number of months.

10. In general, there are a number of potential pitfalls associated with direct food aid. Food aid provided in-kind can drive down the domestic price of food, undermining domestic food production, especially if there is persistency in receipt of food aid. If distributed outside of normal commercial marketing channels, food aid can also displace local traders and reduce their incentives to invest in infrastructure, especially in food deficit regions. Furthermore, food aid has often been poorly timed, because decisions are driven more by the need of donor countries to dispose of surpluses to maintain high domestic prices, rather than the needs of food-deficit countries. Foreign food aid influx that is not governed by a clear and targeted emergency risk management strategy can further distort incentives and undermine long-term food security.

11. Direct food-aid also raises additional concerns. First, international evidence suggests that due to poor targeting and inconsistent receipt of assistance (as well as possibly small quantities) food aid has had only a small impact on the living standards of the ultra-poor. Second, the cost of delivering food aid is generally very high, with administration costs usually amounting to as much as the value of the food distributed.

12. In Malawi there has been substantial effort and progress to resolve some of the general challenges mentioned above to ensure timeliness of funding, coordination across programs, improved targeting, and monitoring of the results. Firstly, in order to improve the timeliness and predictability of food aid, in 2005 WFP Malawi adopted a different funding strategy, whereby financial resources to allow the timely start of the relief operation were ‘borrowed’ from a central WFP budget while the appeals to the international donors were ongoing to reimburse this ‘loan’. This approach was considered successful in ensuring that the 2005 harvest failure did not develop into a famine situation.

13. Secondly, in recent years, the allocation of food aid has been rationalized, under the overall coordination the Food Security Joint Task Force (FSJTF), which is a national level task force created by government in 2002 (with a technical secretariat and six sub-committees). The creation of this government task force at national level promoted agreement and coordination among stakeholders of the humanitarian response to emergencies. The Food Allocation Working Group, of the Humanitarian sub-committee of the FSJTF structure has provided a crucial forum to develop the targeting criteria. A key actor within this government-led framework is the Joint Emergency Food Aid Program (JEFAP)¹⁵³, which includes representatives of various government ministries, the donor community and a consortium of NGOs, to provide coordination and facilitate food distribution on the ground. The objectives of JEFAP is to source and

¹⁵³ The Joint Emergency Food Aid Program (JEFAP) was formed through the collaboration of the government of Malawi, the donor organizations, WFP and the Non-Governmental Organizations’ (NGOs) Consortium.

coordinate the distribution of relief food items to the most vulnerable and food insecure households in Malawi in a spirit of transparency and accountability. The JEFAP has also provided a forum to test and refine the operational targeting criteria.

14. The Malawi Vulnerability Assessment Committee (MVAC)¹⁵⁴ is the main institutional process generating information for national-level targeting decisions. The MVAC carries out an annual livelihoods analysis to assess which areas are most in need of assistance. The main methodology adopted by MVAC is a Livelihoods-Based Vulnerability Approach, known as the Household Economy Approach (HEA). This livelihoods-based vulnerability approach generates information and analysis that provides a foundation for better understanding the dynamics of change and vulnerability within households.¹⁵⁵

15. The use of rolling needs assessments has made the *geographic targeting* more soundly based. WFP targets geographic areas with acute and chronic food insecurity and malnutrition in close partnership with the MVAC and JEFAP, to both which WFP has been a major contributor. MVAC's annual assessments provide an agreed, nationally-owned basis for the prioritization of acutely food insecure Districts, and the quantification of food aid needs at the District level. The consensus generated by joint donor, government, UN and NGO involvement in MVAC is particularly valuable given the domestic political pressures to spread relief food widely to address underlying poverty.

16. The *geographical targeting* provided by the MVAC is then complemented with *community-based targeting*, whereby a group of community members decide which households in the community will receive the benefits. The *community-based targeting* process entails (i) sensitizing villagers to the rationale and method to be employed for targeting at the household level; (ii) election by the villagers of gender balanced Village Relief Committees (VRC) that would apply the nationally agreed social and economic criteria for household selection and manage the handling, distribution and accounting of food supplies; (iii) selection of the targeted households/individuals by the VRC; and (iv) verification of the list of target households by the JEFAP partners.

17. Finally, WFP and JEFAP have instituted a strong monitoring system, known as the Community and Household Surveillance, to monitor implementation and assess the immediate outcome of food (on a short term basis).¹⁵⁶ The data is collected using a questionnaire and through monthly focus group discussions.

18. In spite of the impressive amount of work done (and ongoing) by JEFAP, MVAC, and WFP Malawi, on the development of (geographical and community-based) targeting, however, it is unclear that food aid targeting functions well in Malawi.

¹⁵⁴ The MVAC is a consortium committee of government, NGOs and UN agencies chaired by the Ministry of Economic Planning and Development. MVAC's purpose is to undertake assessments and analysis that improve the understanding of vulnerability, and inform programming and policy to reduce vulnerability..

¹⁵⁵ It is worth highlighting that the MVAC presents information in the form of 'missing food entitlements' that are also calculated as a cash equivalent. Hence, the MVAC could be used also for the planning of other safety nets interventions, other than food aid, such as cash transfers or public works programs that transfer food and/or cash.

¹⁵⁶ WFP also carried out a Post Distribution Monitoring exercise to monitor the perceptions that both beneficiaries and non-beneficiaries have of the (WFP) food aid operation.

19. More than one quarter of all households have received food aid through the general distribution program in the years 2001-2003 (Table 9.2).¹⁵⁷ However, despite potential concern¹⁵⁸ that free food distribution can become a permanent fixture for some communities and households, Table 9.2 shows that very few households received food aid in each of the years 2001-2003; rather the majority received food aid in one of the three years.

Table 9.2: Receipt of program benefits 2001-2003 (percent of IHS2 households reporting)

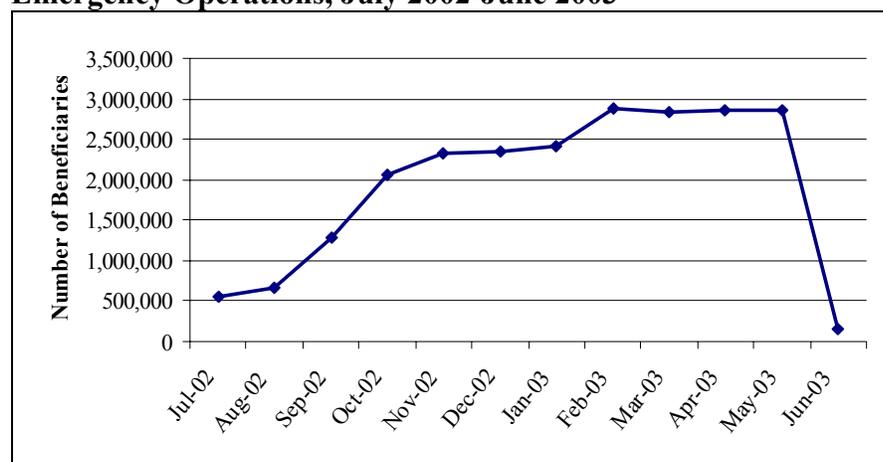
	1 time	2 times	All 3 years
Free food/maize distribution	17.8	6.3	2.4
Food/Cash-for-work	4.9	0.5	0.1
TNP	5.2	1.3	0.5
Starter pack (TIP)*	22.7	13.9	20.9

Source: National Statistical Office, IHS2

Notes: * Includes rainy season and *dimba* season starter packs.

20. There is a notable discrepancy in the incidence of food aid reported in the IHS2 with the administrative data from the main food aid source. By early 2003, nearly one in four Malawians were receiving food aid according to WFP data (Figure 9.1). However, these figures are at odds with the findings from the IHS2 household survey where a much smaller number of households report receiving free food (Table 9.3). Some of this discrepancy might be due to the fact that food aid beneficiaries are concentrated in targeted districts, rather than being spread uniformly across the country. This might result into an under estimation of total number of beneficiaries in the IHS2 survey.

Figure 9.1: Number of people who benefited from WFP food aid distribution during Emergency Operations, July 2002-June 2003



Source: WFP 2004

¹⁵⁷ Mano et al. (2003) review the policy and economic dimensions of the food emergency in 2002-2003, the product of consecutive production shortfalls in 2001 and 2002.

¹⁵⁸ Abdulai et al. (2005) find no evidence that persistent receipt of food aid reduced household food production in Ethiopia.

21. Figure 9.2 plots the receipt of food aid across income deciles among agricultural and non-agricultural households. This shows little differential across income groups, suggesting that targeting of food aid to the poorest households appears weak. This suggests that the guidelines dictated for emergency relief seem to result in substantial receipt of emergency food to non-poor households, at least in the IHS2 data. There are many possible reasons for this mismatch. In part this may be the direct result of the food aid targeting guidelines. Targeting is not necessarily based on income group, and combines both social and economic criteria.

22. Targeting within Districts based on the MVAC needs assessment has been problematic. This is mainly because the District level information about which Traditional Authorities (TAs, which is an administrative unit below the district level) are most vulnerable has often disagreed with the MVAC analysis. Consequently the actual decisions on intra-district targeting are often arrived through a pragmatic process of negotiations and compromise, using local information (both from government offices and cooperating partners) to adjust and fine-tune the MVAC.¹⁵⁹

23. Community-based approaches to targeting fall short when community leaders and households do not understand the stated targeting criterion. The culture in Malawi recognizes the right of chiefs and others to control matters and to receive special treatment, as well as a strong sense of sharing resources. Anecdotal information suggests that in some cases there were distortions of the system by local chiefs and the VRCs that sought to register for assistance their relatives who did not meet the agreed targeting criteria. Second, often beneficiary households may share the food received with relatives both locally and from other areas where food aid was not being provided.¹⁶⁰ These factors work against attempts to ensure that the most vulnerable groups are targeted and that they alone receive and consume the food provided.

Table 9.3: Number of households who benefited from social protection intervention (calculated from IHS2 households reporting)

	2001	2002	2003
Free food/maize distribution	269,781 (1,296,207)	406,953 (2,006,923)	335,743 (1,617,152)
Food/Cash-for-work	26,532	47,379	93,283
TNP	66,980	88,769	96,591
Starter pack (TIP)*	869,797	1,010,328	1,132,902

Note: Estimated number of households is based on weighted IHS2 data. Number in parentheses is the total population in the beneficiary households. * Includes rainy season (Summer TIP) and *dimba* season (Winter TIP) starter packs.

Source: National Statistical Office, IHS2.

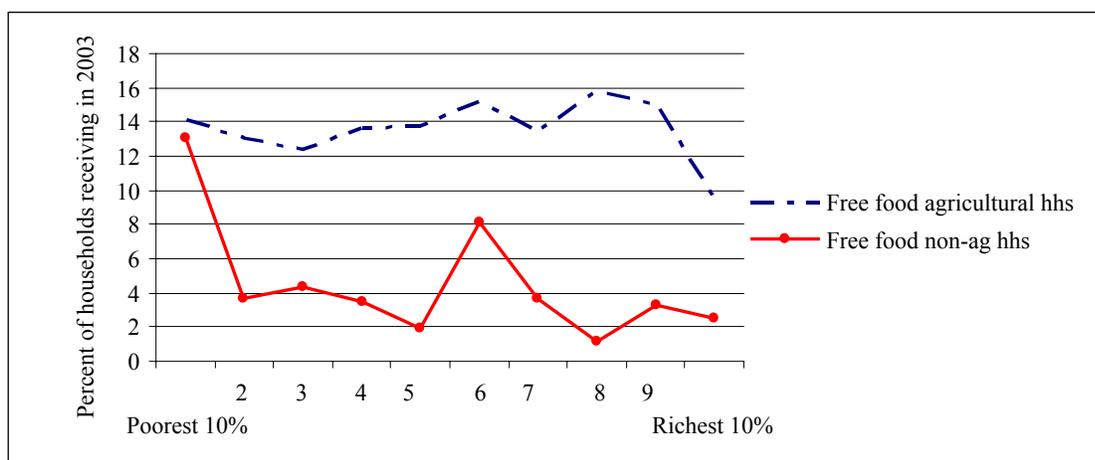
¹⁵⁹ Local leaders are under pressure to spread food aid allocations among all or most TAs in a targeted district, and or to most villages in a targeted TA. Such pressures are very common in local geographic targeting, regardless of the initial needs assessment method: excluding parts of their constituencies is an inherently unpopular and difficult thing to do for local government and leaders to do. Consequently this has sometimes led to food aid being spread too thinly to be effective.

¹⁶⁰ Sharing of food is sometimes used as a strategy to make sure that those whom they share the food with will do likewise if they are faced with similar problems.

24. These findings are in line with those of other studies. Sharma (2005) assessed the JEFAP approach to targeting and concludes that there is little knowledge or understanding among community leaders and households about the specific criteria. Many non-poor households nevertheless received assistance. This situation is attributed in part to the difficulty of differentiating very poor households, in addition to the poor understanding of the targeting criteria, and corruption.

25. However, the result could also indicate that communities have different perceptions of what constitutes poverty, or better information than that informing the general targeting criterion. For instance, while the JEFAP guidelines state that food insecurity should be the primary criterion for household selection, VRCs show a widespread tendency to prioritize social criteria, particularly orphan-containing households (WFP 2005).

Figure 9.2: Receipt of free food by deciles and type in 2003 (percent of IHS2 households reporting)



Source: National Statistical Office, IHS2

26. The challenges of targeting needy and vulnerable households in Malawi will be analyzed in greater detail below. In general, as will be discussed below, the two-tier targeting approach adopted by JEFAP appears to provide the best possible results to identify needy households in Malawi. The results presented in this section, however, suggest the need for additional study of the effectiveness of household-level targeting of food assistance in Malawi by communities.¹⁶¹ This recommendation is in line with the findings and recommendations arising from the substantial monitoring and evaluation work carried out by WFP Malawi.

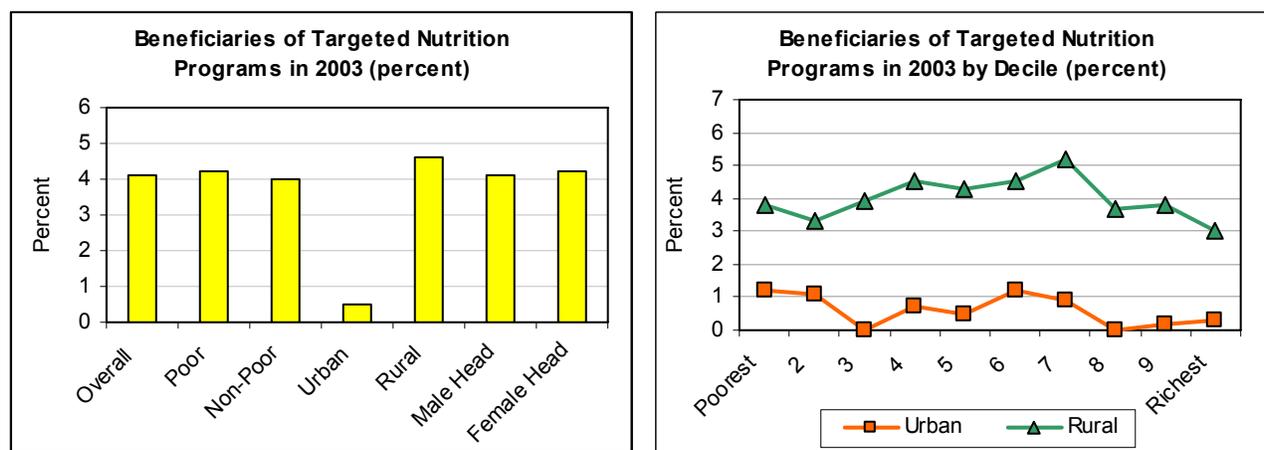
Targeted Nutrition Programs

27. The targeted nutrition programs (TNP) provides *likuni phala* (a blend of maize meal and soya flour) to young children (under 5 years) and mothers and supplementary feeding programs for malnourished children admitted to nutritional rehabilitation units. These programs aim to

¹⁶¹ One example from Ethiopia of such analysis is Gilligan and Hoddinott (2005). They note that while the use of community-based targeting is growing, “relatively little is known about how well such an approach actually targets resources to those most in need.”

improve the nutritional and health status of malnourished and pregnant and lactating mothers and malnourished under 5 children in poor and food insecure areas through increased consumption of nutritious food and improved health and nutrition practices. Nationally, rates of malnutrition in Malawi are extremely high, even among wealthier households (as detailed in Chapter Four of this report). Among households with at least one child under 5, about 5 percent received some supplemental feeding assistance in 2003. There was no difference in the prevalence of this assistance between poor and non-poor households (Figure 9.3). It should be noted, however, that these findings do not necessarily reflect poor targeting, but rather the fact that severe child malnutrition is fairly constant across all income quintiles in Malawi (See Chapter Four).

Figure 9.3: Participation in Targeted Nutrition Programs (TNP) in 2003 (percent of IHS2 households reporting)



Source: National Statistical Office, IHS2

School Feeding Programs

28. The school feeding (SF) program in Malawi was launched in 1995 and was expanded from 1998-2000. At the primary school level, SF has in large part been supported by the WFP and GTZ. The government does not fund school feeding for primary schools, but partially funds feeding at boarding school children (which is generally more costly than the primary SF programs). The SF operates in schools in areas that have been designated as chronically food insecure. Thirteen percent of primary schools were offering some SF in 2003 (665 out of 5,103 schools), but about half of these (301) were schools included just in 2003 as part of an emergency budget. The other schools (364) were part of SF for more than 1 year. The SF program provides all students in the covered school with in-school food (*likuni phala*), as well as a take-home ration for girls and double orphaned boys who attend 80 percent of school days (as an incentive to stay in school).

29. The SF program is not generally considered a nutrition program as it is not targeted to nutritionally vulnerable ages (it also does not address the nexus of health, sanitation, child care and food that nutrition programs do). Feeding programs for school children are not a priority from the perspective of malnutrition. Nutrition programs for school children are expensive, and will not reverse stunting much. However, improving their micronutrient status will have an

impact on the quality of their life by improving their health, and may keep in them in school, thereby increasing their skill level. A WFP Malawi study conducted in March 2004 found that in schools providing feeding, the enrollment for girls increased by 38 percent and pass rates increased by 10 percent from previous years compared to a decline by 10 percent in enrollment and an increase of only 5 percent in non-feeding schools.

30. In 2003, the estimated cost of providing *likuni phala* for 1 million school children was about US\$29 million (including transport and administrative costs), or about \$30 per child per year. Providing the take-away ration to all girls would cost an additional US\$14.5 million. Costs have since declined and are currently estimated at around \$15 per child (and an additional \$15 for the girls' take-away ration). To put these figures in context, the recurrent government expenditures for each primary school pupil in 2003 was \$17.3. As such, in its current form, the SF program is not a cost-effective safety net for Malawi, although it has education objectives that may justify its existence. It could serve as a safety net, for example if it helps keep children in school during droughts. It is not selective of the poor, except to the extent that some schools have a disproportionately poor student population. By definition, it excludes primary-aged children who are not attending and are more likely to be poor (in terms of the household's current income as well as poor in the future due to their lack of schooling). With the introduction of Universal Primary Education in 1994, the selection issues may be less marked, but even if the program managed to attract poor primary-aged children into schools (for example, with the incentive of take-away rations which can benefit other household members), it also excludes poor households who do not have any primary-aged children.

Public Works Programs

31. Public works programs (PWP) entail the payment of a wage in return for the provision of labor, which is used for public works. PWPs are popular with policymakers, because they offer the potential of simultaneously transferring food or income to the poor and creating useful assets. PWPs are also one of the few self-targeting instruments available. By offering a low daily wage (even below government minimum wage) the PWP discourages people with alternative earning opportunities from participation. In addition to minimizing the difficult problem of trying to target transfers, this strategy also avoids creating dependency and minimizing 'leakages' to the non-poor, because of the work requirement. While the set wage rate is quite low, the effective wage rate is often higher, as most participants complete tasks in less than the normal daily working hours. However, the pay is still perceived by participants and non-participants as lower than alternative employment. In terms of social protection objectives, well-timed public works employment can smooth incomes and consumption in contexts where seasonal under-employment is a severe constraint on livelihoods. Further, these programs also have the capacity, if well-managed, to create productive infrastructure.¹⁶²

32. There are some drawbacks of the PWP as a safety net, however. First, they can be costly. Smith (2001) reports that \$2 must be spent for every \$1 worth of benefit transferred in wages, although this ignores the productive asset/infrastructure that may be produced through the

¹⁶² In addition, the PWP approach offers advantages if it were to be shifted from a discrete projects-based approach to a more continuous program of maintenance and execution of the government's normal/on-going capital works program, but using PWP-like employment practices (Smith, 2001).

program. It can also be administratively difficult to manage compared to pure transfer schemes. Second, as a form of social assistance to the poor, they necessarily exclude households who do not have able-bodied adults. About 5 percent of the population resides in households with no able-bodied adult from ages 15-64, although these households are not more likely to be poor. Households without available adult labor (that is, having unable adults or no able-bodied adults who are not otherwise working full-time) may be a more appropriate gauge for the potential number of poor households who would be excluded. Finally, the period of the year when the rural population is most in need of additional income, the lean season (November-March), is also when households are most in need of their labor for their own farm activities. Moreover, as this also overlaps with the rains, it is most difficult to execute public works programs during the lean season.

33. In Malawi, a wide range of public works programs been implemented by the government, donors and NGOs, with the objective of providing an employment-based safety net for households facing chronic or transitory food shortage. Despite the low wage, there tends to be excessive demand for these jobs and workers are often recruited on a first-come-first-serve basis. Recent public works activities in Malawi include food-for-work, cash-for-work, and input-for-work programs.

Food-for-work and Cash-for-work Programs

34. The Malawi Social Action Fund (MASAF) includes a Public Works Program (PWP) that has been operational since the beginning of the project in the mid-1990s.¹⁶³ The PWP is a key component of MASAF, and aims to help lift vulnerable groups out of poverty. In addition, various other cash-for-work projects have been implemented, in collaboration with MASAF or through through Local Authority Managed Projects (LAMPs), including: ‘Improvement of Livelihood through Public Works Programs’ (funded by DFID), the ‘Emergency Drought Recovery Program’ (funded by the World Bank), and ‘Relief Cash for Works Program’ (funded by the government of Malawi). Also, under a European Union-funded Public Works Program, the government of Malawi implements labor-intensive food security projects, construction and rehabilitation of rural feeder roads and transport infrastructure, and planting of community woodlots.

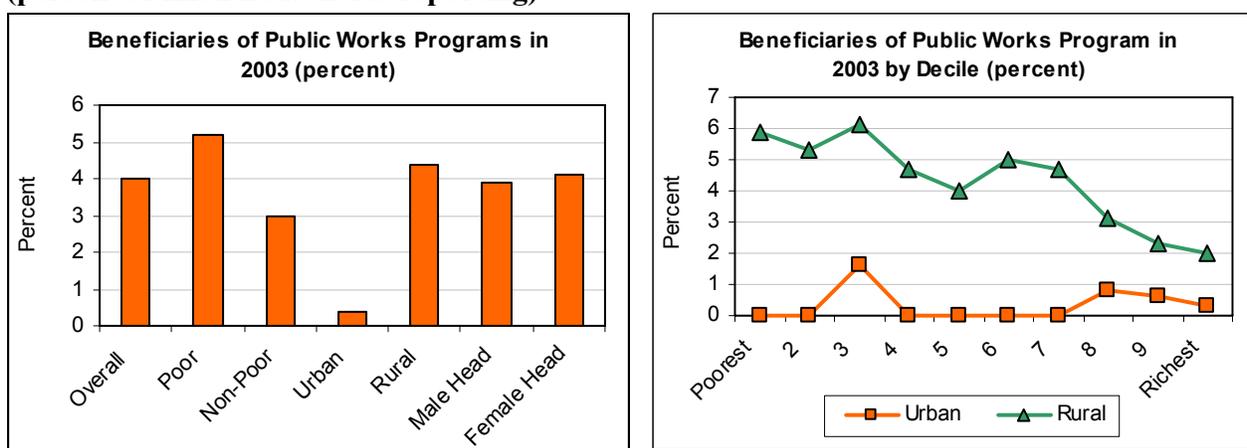
35. In Malawi, PWPs mostly support labor-intensive activities in construction, rehabilitation, and maintenance of economic infrastructure (such as roads and improved natural resource management). Most activities are in road rehabilitation (about 80 percent of projects), followed by reforestation, water (flood control) and agriculture. Food-for-work program have also been operational. Following the food crisis of 2001-2002, the JEFAP discussed above implemented road rehabilitation projects, cassava planting for hunger mitigation, reforestation, fishpond construction and manure production, with support from the World Food Program (WFP) and USAID’s Food for Peace Program.

¹⁶³ The Malawi Social Action Fund (MASAF) was established in 1995 with funding from the World Bank, as a key poverty alleviation instrument for the government to address community social needs. Given the success of the program, the World Bank provided additional financing to MASAF in 1998, and most recently in 2003. For a detailed review of the first phase of the MASAF program, see Bloom et al. (2005).

36. In 2004, 14 percent of the population resided in communities with PWPs (as identified by the IHS2 community questionnaire). Among the communities that reported having a MASAF PWP, the mean percentage of adult males that are reported to work for the PWP is 22 percent, compared to 25 percent of females. The employment rates across gender are not always the same within communities, but generally quite close. MASAF data indicate that almost 95,000 workers were employed on MASAF cash-for-work projects in fiscal year 2003/04. This number is in line with IHS2 data that about 4 percent of households benefited from PWP in 2003 (where at least one household member participated in a food or cash-for-work program). More generally, the IHS2 indicates that in total about 5 percent of all households reported that at least one household member participated in a food or cash-for-work program at least one year during 2001-2003. Also, as for the evidence on food aid, few households engaged in a PWP for more than one year between 2001-2003, and the majority did so for only one calendar year (90 percent). As such, at current levels PWPs are not large enough to constitute a wide-scale safety net.

37. While PWPs in Malawi appear to be better-targeted than other safety nets programs, the evidence suggests that the programs are still not well-targeted to the poor, and about a third of the program beneficiaries were from non-poor households (Figure 9.4).

Figure 9.4: Proportion of Households Receiving Public Works Program (PWP) in 2003 (percent of IHS2 households reporting)



Note: The graphs include only cash-for-work and food-for-work programs.
Source: National Statistical Office, IHS2

Inputs-for-work

38. Small-scale input-for-work programs have recently been initiated in Malawi, benefiting just 1 percent of households in the period covered by the IHS2. Between 2003 and 2005, DFID and the World Bank financed a project called ‘Sustaining Productive Livelihoods through Income for Assets’ (SUPLIFA), in which workers received 50kg of urea fertilizer and 10kg of maize seed after 20 days of work. Initial findings indicate that the majority of smallholders showed a preference for the labor for input scheme. Over 80% of beneficiaries reported that they would rather be paid in inputs than cash or food, because of the accumulated value of the payment: if used properly, it yields more than its value in grain yields. The fact that it is not as liquid as cash also provides less temptation to spend on other things. This preference could also

reflect other reasons, such as failures in fertilizer markets (e.g. fertilizer may not be readily available in the market), or uncertainty about prices, or concerns about being able to keep cash (e.g. due to pressure from family members for access to cash or options to safely store cash). Smallholders participating in the program registered significant increases in yields. However, dry spells at critical stages of the maize cycle reduced yields significantly. The poor weather conditions experienced in both years that the project was operational demonstrated the risk of a strategy that focuses solely on increasing maize production as a means of attaining household food security (SPLIFA Project Monitoring and Evaluation Reports. Muscle Shoals, AL: IFDC).

TIP and Fertilizer Subsidies

39. Subsidized agricultural inputs have been a major part of Malawi's social protection scheme in recent years and continue to feature prominently in debates about economic and social policy in Malawi, with sharply contrasting views on the subject. On the one hand, some stakeholders believe that a government role in fertilizer marketing and distribution is essential to increasing productivity and incomes for rural smallholders. They also claim that the private sector is unable or unwilling to supply fertilizer to remote rural areas and that even when private markets function, the price of fertilizer is beyond the means of many smallholders. In this view, free or subsidized fertilizer should be provided by the government to assist the rural poor. On the opposing side, others argue that if the government were to simply get out of the way, the private sector would step in and supply fertilizer widely at a lower price, and government intervention in the fertilizer market is itself the problem. Others point out that in general, from a long-run development perspective, this program continues to promote reliance on fertilizer-dependent hybrid maize which might retard diversification, thus working against a key element in the poverty alleviation strategy for Malawi (Smith, 2001).

40. Concerned by a pronounced decline in the use of chemical fertilizers following large price increases for fertilizer in 1998, the government reinstated inputs subsidies, in the form of a "Universal Starter Pack" program. The "Universal Started Pack" program operated in 1998/99 and in 1999/00, with the intention to provided fertilizer, maize seed and legume seed sufficient for 0.1 ha to all smallholder households with land in rural Malawi (about 2.8 million households, or 90 percent of the population).

41. The program was, in essence, a pure transfer, which translated to about US\$15 per household, a value 50 percent higher than the US\$10 cost of providing each packs (Smith, 2001). Each pack was expected to produce six weeks of additional maize and thus get families through the worst of the lean season; with the an expectation that the area planted to hybrids would increase in succeeding crop years, once the value of the technology had been demonstrated. The USP remained in effect for only two crop years, requiring budgetary outlays of over US\$25 million in both years. The advantages of its universality were the ease of administrative burden, and widespread popular and political support. On the other hand, the USP was very expensive and a large portion was directed to the non-poor.

42. Succumbing to budgetary (and donor) pressures, the USP was replaced with a "Targeted Inputs Program" (TIP) in the 2000/2001 crop year.¹⁶⁴ Originally modest in scope, TIP was

¹⁶⁴ The TIP pack included 10Kg of fertilizer, 1Kg of maize seeds, and 1 Kg of legume seeds.

designed to serve about only half the number of beneficiaries covered by the USP in its first year, at less than one third of the cost. The TIP was intended to distribute packs to the poorest smallholder farmers using a combination of geographical and community targeting. The 2001/2002 TIP was further scaled down to roughly a million beneficiaries. Following the severe production shortfalls during the 2001/02 production season, the TIP program was scaled back up from 1 million to cover almost all households in the 2002/2003 agricultural season, and was set at 1.7 million beneficiaries in 2003/04. By 2004/2005, the final year of TIP, the number of beneficiaries was purported to have climbed to 2.0 million households, almost 70 percent of the number served by the USP, while costs had escalated to more than US\$38 million.¹⁶⁵

43. While most officials and donors supported the TIP as a recovery measure, its scope and long-term were called into question,¹⁶⁶ and in the 2005/2006 season, the TIP was replaced by a rationed fertilizer subsidy in the form of a fertilizer voucher program, providing approximately a 70 percent subsidy to the price of a 50Kg bag of fertilizer. The new program entails distribution of vouchers for maize and tobacco to farmers who can demonstrate having enough cash at hand to use the fertilizer voucher. The fertilizers are sold through the parastatals ADMARC and Smallholder Farmers Fertilizer Revolving Fund (SFFRM). Preliminary evidence suggests that the voucher scheme may have led to an increase in the total use of fertilizer in the country (with approximately 60 percent of the subsidy resulting in displacement of commercial sales). Combined with very good rains, the scheme has resulted in a bumper maize harvest in 2006, which more than covers national food requirements.

44. There are a number of shortcomings with the current design of the voucher scheme, however. First, it is extremely expensive. For comparison, the cost of a starter pack corresponds to a cost of about US\$20 per beneficiary (or US\$30 considering that one third of beneficiaries do not actually receive the pack). This contrasts with the US\$17 per child that the government spends on primary education every year. Second, given that the subsidized quantity of fertilizer corresponds to around 90 percent of the normal annual smallholder demand, and about 70 percent of the overall national market, the exclusion of the private sector in the procurement, distribution and sale of these subsidized inputs, poses a serious risk to the existence of private sector traders in fertilizer in Malawi. Commercial fertilizer sales in cash or on credit have slumped by 60-70 percent in 2005/06, with potentially disastrous consequences on the existing local manufacturing and distribution capacity of the fertilizers. Third, in terms of providing social assistance, such a voucher program is regressive in that the poorest farmers, who have no or little cash, will be unable to obtain a voucher.

45. As the IHS2 data were collected from 2004 to early 2005, they do not cover the newer fertilizer voucher program, but refer to the Starter Pack program. Nevertheless, there are several

¹⁶⁵ In effect the 2004/05 program was an enhanced version of the TIP. The packs distributed were larger comprising 25Kg of fertilizer, 5Kg of high-value OPV maize seeds, and 1g of legume seeds. This increase in the size of the packs accounts for the substantial share of the higher costs.

¹⁶⁶ There were questions about whether subsidizing farm inputs represents an optimal use of scarce budgetary resources, and whether it should have been linked to other rural programs (e.g. inputs-for-work; Mano, et. al. 2003). Some proponents were quick to point out that the country had a maize surplus when the USP was in force (see Levy 2005, amongst others), while others were mindful that this happened during years of favorable weather (see Smith 2001, amongst others). Some regional analysts have also expressed concern over whether inputs subsidies could disrupt production incentives in neighboring Mozambique.

interesting findings from the household survey data in terms of overall coverage of TIP and the characteristics of receiving households.

46. First, there appears to be a significant amount of leakage. The program was increasing in coverage from 2001/2002 to 2003/2004, with about 40 percent of households receiving TIP in 2003/2004. This is just over 1.1 million households, a substantially lower level than the targets of 1.7 million set out for that year (Kambewa, 2005). This is equivalent to a leakage of more than 30 percent in terms of reduced scope of the program. This could partly be explained by some households receiving multiple packs, but the extent of the problem appears to be larger than previously documented: about 14 percent of households were found to receive more than one pack during earlier years of the TIP (Smith, 2001).

47. Second, there appears to be considerable scope for improved targeting to the poorest farming households. About 40 percent of the program is channeled towards non-poor households. Figure 9.5 shows the receipt of Starter Packs in 2003/2004 (either rainy season or the less prevalent *dimba* season pack) by household wealth and by farm status of household.¹⁶⁷ Overall, there is some evidence that the Starter Pack program is being targeted to the poor. The majority of recipients were poor households in rural areas, and more female headed households received TIP than male headed households. However, a large share of wealthier households also received TIP. In fact, more than 40 percent of all farmers across all deciles received the pack in 2003 (with the exception of the richest decile, where 30 percent of households received it).¹⁶⁸ Surprisingly, a small share of non-farming households also report getting Starter Pack. About 10 percent of the poorest decile of non-farm households received TIP in 2003. Nyirongo *et al.* (2003) conclude that the targeting efforts were largely unsuccessful, based on household surveys and evaluations of TIP conducted for 2001/02 and 2002/03 cropping seasons. Some argue that the poor targeting is in part attributed to the system of community-based targeting where social status and kin relations will factor into allocations as much as indicators of need (Box 9.2).

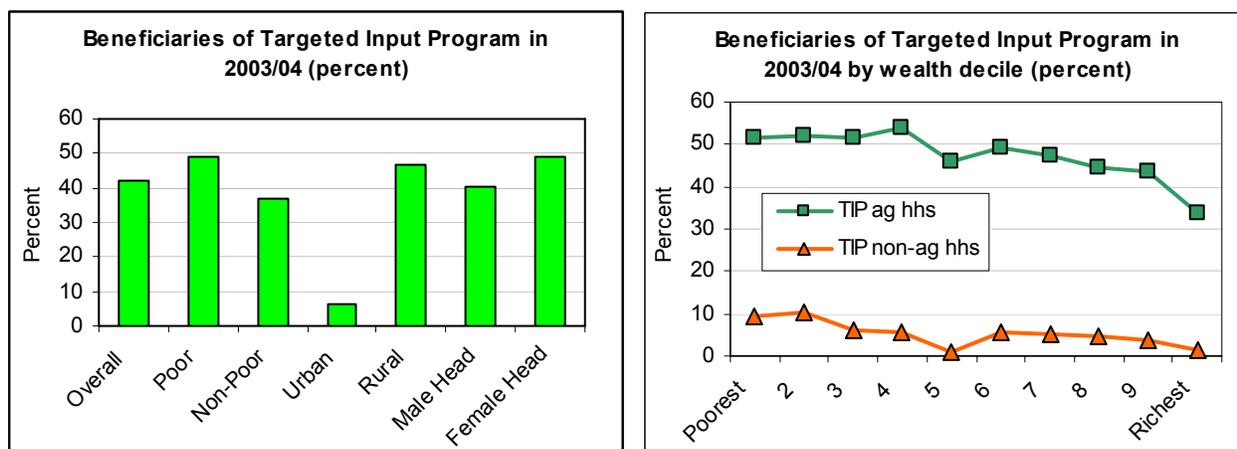
48. Third, there is some evidence that smallholders substitute fertilizer in the starter packs for some of their fertilizer expenditure. Only 63 percent of recipients do not use any other fertilizer. On the other hand, as many as 37 percent buy additional fertilizer. For the latter group, assuming that the income elasticity of fertilizer consumption is small, the starter pack likely displaces an almost equivalent amount of fertilizer consumption by these smallholders. Hence, the starter pack only partially increases national consumption (by around 63 percent of the quantity

¹⁶⁷ It should be noted that some of the inclusion errors (i.e. non-poor households benefiting from TIP) is due to the aggregation in the analysis of both the rainy season (Summer) TIP and the *dimba* season (Winter) TIP. In fact, while the Summer TIP program aimed to boost household food security and had the objective of targeting poorer households, the much smaller Winter TIP program was given mainly to those farmers who can cultivate maize in winter because they have access to *dimba* gardens, with little attention to their poverty status. The aim of the Winter TIP program was to increase national maize production and thereby contribute to overall national food security. However, the number of beneficiaries of the Winter TIP is only around 20 percent of the number of beneficiaries of the Summer TIP, and therefore the pattern would remain broadly unchanged if focusing on Summer TIP only.

¹⁶⁸ It should be highlighted that to the extent that Starter Pack goes to (richer) households who are already intending to use other fertilizer, it effectively displaces other demand for fertilizer. Therefore, failure to reach the target beneficiaries is bad both because it nullifies the safety nets objectives of the program, but also because it undermines the productivity enhancement objectives, since the total quantity of fertilizer used does not increase. Understanding the scope of this effect is important as it can greatly influence an assessment of the effectiveness of starter pack. This analysis has not been carried out here, however.

distributed). Further, for households consuming additional fertilizer, the starter pack is equivalent to a direct welfare transfer, whereby these households will choose to allocate (most of) the money saved from the use of the starter pack towards other needs. Given the large administrative costs of a starter pack program compared to direct cash transfers, however, this implies a need to revisit the role of starter packs.

Figure 9.5: Proportion of Households Receiving Targeted Input Program (TIP) in 2003/04 by wealth deciles and type of household (percent of IHS2 households reporting)



Note: Includes both rainy season TIP (summer) and *dimba* season TIP (winter).

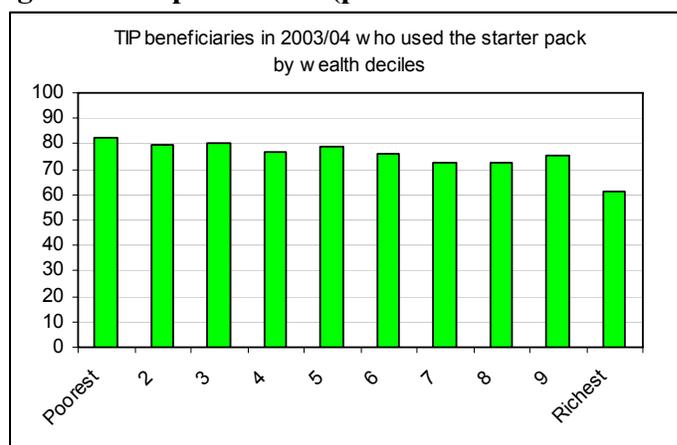
Source: National Statistical Office, IHS2

49. Fourth, in spite of these shortcomings, rates of utilization of the TIP are relatively good (Figure 9.6 and Table 9.4). The IHS2 data provide evidence on whether the households who received Starter Pack use it. These data come from two distinct modules in the questionnaire, and discrepancies between the two would be indicative of households selling off their Starter Pack. On average, about 25 percent of the households who receive the Starter Pack do not ultimately use it (Table 9.4); the implication being that they sell it (although this could also reflect that they store it, or give it to other family members). This number is lower (15 percent) when the transfer is well-targeted, as approximated by households who do not use any other fertilizer. The households who use other fertilizer are much more likely not to use their Starter Pack (40 percent). Hence, to the extent that Starter Pack is received by the poorest households (who will not otherwise use fertilizer), it is highly likely to actually be used. Nyirongo *et al.* (2003) report even higher rates of utilization, of over 90 percent of Starter Pack recipients

50. By design, Starter Packs are intended for use by the household and not for resale. Nevertheless, it is presumed that there is an informal market for Starter Packs (at a less than full value price). This is a plausible scenario for the poorest, who may attempt to finance other basic needs through selling their Starter Pack. While some of the income transfer benefits from the program will still reach the poor, efforts to raise productivity and production levels among small holders would be thwarted if these households do not actually use the Starter Pack. The possibility of resale could be advantageous, as the farmer knows best what constrains his/her productivity, and the resellers exercise a choice to use the fertilizer on their fields, with a risky return, or sell it for a sure return. The latter may sometimes be the better option. Extensive

reselling, therefore, is not necessarily a major critique of the program, but in such circumstances, its effectiveness would then have to be compared to a direct cash transfer and in terms of cost-effectiveness is generally less efficient compared to cash.¹⁶⁹

Figure 9.6: Farming households in 2003/04 season who received the TIP and used it for agricultural production (percent of IHS2 households reporting)



Source: National Statistical Office, IHS2

Table 9.4: TIP fertilizer receipt and use in 2003/2004 cropping season (percent of households reporting)

Type of household	Any TIP received in 2003	Among those receiving TIP in 2003, percent who used TIP in farming
Farming households in 2003/2004 cropping season	44.5 (4,989)	76.5* (2,180)
Households using any non-TIP fertilizer	35.7* (2,076)	59.5* (727)
Households not using any non-TIP fertilizer	50.6* (2,913)	84.8* (1,453)
Non-farm household	5.5 (1,304)	n.a.

Note: Figure in parentheses is the unweighted sample of households.

Source: National Statistical Office, IHS2

¹⁶⁹ Gough et al. (2003) undertake such an assessment using ethnographic linear programming to predict the impact of transfers on cash incomes over a seven year horizon. Their model assumes some rate at which households informally sell off their starter pack and vouchers. Any conclusions of the relative effectiveness of transfer programs (including vouchers for non-fertilizer goods) then depends on the rate at which households utilize an in-kind starter pack or voucher versus selling it at some value below the true cash value of the in-kind transfer.

BOX 9.2: INEFFECTIVENESS OF TARGETING IN PREVIOUS FERTILIZER TRANSFERS

The TIP was intended to distribute packs to only the poorest smallholder farmers, using community targeting. Subsequent evaluations showed that community poverty targeting failed to give preference to the poorest (Levy 2005). It was hypothesized that because the packages were perceived as ‘free gifts’, community leaders would—as Malawian cultural norms dictate—sometimes distribute packs equally among all members of the village, even breaking open bags to divide the contents. In other cases, packs were distributed on the basis of kinship ties or as a way of gaining favor with village elites.

However, policymakers and donors felt that this might have been because rural communities had not been properly sensitized about beneficiary selection criteria and procedures. Accordingly, in 2001/2002, a countrywide sensitization campaign was undertaken involving district and MoAI personnel. This was designed to ensure that the Village Task Forces (VTFs) – those in charge of beneficiary selection at the village level – would have a clear idea of the procedures and criteria to be used in targeting for TIP. Nevertheless, the outcome in 2001/2002 was the same as that of the previous year: the poverty profiles of TIP recipient and non-recipients were almost identical (Levy 2005).

Lawson et al (2001) report that during their field interviews, the monitors found evidence of resentment of recipients by non-recipients, and of fears on the part of recipients about the actions of non-recipients towards them. There was considerable anecdotal evidence of resentment towards the Village Head and the VTF members, owing to their selecting beneficiaries through favoritism and nepotism. This may be part of the explanation of the statistical findings that large numbers of recipients were not among the targeted categories, despite VTF awareness of the targeting criteria.

Quota allocations for TIP 2000-01 and TIP 2001-02 were based on arbitrary cut-off points rather on empirically valid levels of poverty or food insecurity. As a result, many deserving households were left out, which is a sure recipe for social conflict. The findings on community targeting suggest that it would be feasible to target free inputs by excluding households that communities agree are ‘undeserving’. This would be perceived as fair by all the stakeholders at village level. However, attaining such consensus might entail including such a large percent of households as to be unworkable given budgetary constraints.

Main findings from the review of the existing safety nets system

51. Though the overall design of the Malawi National Safety Nets Strategy is good, progress in rationalizing and prioritizing safety nets interventions has been limited.¹⁷⁰ The plethora of operational safety net programs have not yet been translated into an effective national social protection system. Critically, the sum total of these various safety net activities has not been sufficient to reduce the overall levels of poverty and vulnerability. Partly, this is due to the poorly coordinated position of donors, which is expressed in a broad array of relatively uncoordinated safety net instruments.

52. The government is aware of the difficulties and the NSU is now coordinating the development of a Social Protection Policy which will provide a more definitive framework for the implementation of various safety nets programs. A number of key changes need to be incorporated in the revised Social Protection program:

¹⁷⁰ It can also be argued, however, that the weak experience in implementation is at least in part the outcome of the design process of the 2002 NSNS strategy. To an extent the NSNS was more a pragmatic cobbling together of existing donor-funded projects, with little evaluation or analysis on whether the individual or combined interventions impacted on poverty. Specifically, the 2002 NSNS strategy gave little consideration to the political and institutional incentives, and consequently when the consolidated funding mechanism failed to materialize, the coordinated approach did not happen either.

- Moving from a series of weakly connected, short-term and *ad hoc* activities to a long-term, regular and predictable system of social protection.
- Shifting from a reactive, crisis driven mechanism to one that effectively protects livelihoods against asset depletion and destitution. This will require clear political will, better institutional capacity, and the need to strengthen coordination and incentives in delivery.
- Ensuring that the safety net program also includes livelihood promotion objectives, that facilitate, at least for some, graduation out of poverty, ultimately reducing the need for social welfare support. This also entails decreasing the emphasis on social assistance and increasing the role of risk management interventions (both at the household level and at the national level, i.e. disaster management).
- Strengthening the role of diagnosis and evidence in the design of the programs, as well as increasing the resources devoted to monitoring and evaluation of existing interventions.
- Adopting better targeting and prioritization; this is critical in light of the tight fiscal constraints and the large number of poor people.
- Increasing government ownership and leadership; this entails not just better coordination of safety nets, but establishing a single safety net program under government control.
- Including the Social Protection expenditure in the budget, to improve the long-term predictable nature of the intervention.

53. In addition, there is a need to improve the implementation of the existing programs. The previous section has highlighted a number of lessons to inform Malawi's reformed national social protection system:

- Food aid distribution and fertilizer pack distributions appear to suffer from significant leakage. That is, the number of people on the ground that report actually receiving the benefit is much lower, by about one third, than the number of people which should be receiving it, based on what has been paid for by the government or donors.
- Targeting is a problem in all the programs, both in terms of exclusion of a large part of the poor, and inclusion of a large share of the non-poor. In practice, existing programs fail to reach about half of the poor, and benefit about 40 percent of the non-poor.
- Given the extent of poverty in Malawi, the size of the PWP (currently reaching less than 5 percent of the poor population per year) appears far too limited and does not constitute an effective safety net for the ultra-poor, and the transient poor who have experienced a shock. Given that the PWP is the best targeted program, there may be a rationale to scale up its operation. This possibility should be examined in the context of developing an

comprehensive and evidence-based social protection strategy, aiming to tackle the underlying causes of poverty.

- The TIP is by far the government's largest safety net program, reaching almost half of the population, and is very expensive at \$20 per beneficiary (or \$30 if one counts the leakage; almost double the \$17 per child spent on primary education). Given that smallholder agriculture is by far the main activity of the poor in Malawi, it seems appropriate to support their productivity by subsidizing their access to inputs. However, substantial gains in the effectiveness and efficiency of the program can be made by (i) reducing leakage, (ii) improving targeting, and (iii) improving the efficiency of its operation/administration by actively involving the private sector in its delivery. In addition, given the large cost, it is important to carry out a careful cost-benefit analysis of the fertilizer subsidy program, and to consider the opportunity cost of alternative interventions which could be funded in its place.
- The recent move to a fertilizer subsidy voucher for the TIP is also regressive, in that it leaves out the destitute that cannot afford to pay the subsidized price (and will rather sell the voucher in the informal market). If fertilizer subsidies are intended as a social protection intervention, then it is paramount that this aspect of the program be revised to ensure that the program benefits the poorest smallholders.
- Food aid distribution, school feeding programs, and TNP do not constitute an adequate answer to the persistent child malnutrition in the country. Nutrition programs for school children are expensive and will not reverse stunting much, because they lack essential elements of nutrition education, better feeding practices, and health and sanitation aspects. The latter programs, while very cost-effective in improving child health, are rarely demanded by communities, as they may not be aware that their young children are deficient in micronutrients and suffer from anemia. Deworming programs are also necessary to achieve improved nutrition. The Honduras Community-Based Integrated Child Care Program could be one of the models available internationally for providing better nutrition/health services to young children in Malawi (see Box 9.3). A similar program has also been successfully developed in Madagascar in recent years.
- However, improving children's micronutrient status through SF will have an impact on the quality of their life by improving their health, and it will keep them in school, thereby increasing their skill level. These benefits may justify their existence, but not in the context of a social protection program.
- Feeding programs should instead be concentrated on children under 5 and pregnant women, since these categories are most vulnerable to malnutrition because they have the highest nutritional requirements of any age group. Food distribution to other adults is a low priority. The fact that TNP beneficiaries are equally distributed across income deciles is not indicative of poor targeting; rather, it underscores the earlier analysis that low income levels are not the only cause of malnutrition in Malawi.

- Finally, there appears to be almost no safety net reaching the urban poor. This is both in terms of alleviating poverty for the urban destitute and to provide opportunities for their participation in economic activity. Moreover, given the fact that many households without able-bodied adults fall in this group, many of the targeting mechanisms fail to reach them effectively.

BOX 9.3: HONDURAS COMMUNITY-BASED INTEGRATED CHILD CARE PROGRAM

The Community-Based Integrated Child Care Program (Atención Integral a la Niñez-Comunitaria, AIN-C) of the Ministry of Health in Honduras is widely regarded as a model program in preventive health and nutrition care. AIN-C relies on volunteers to pro-actively engage both the families and communities to monitor and maintain the adequate growth of children less than 2 years of age. AIN-C also treats and refers sick children under 5 to health services. For the under two's, the Program employs inadequate monthly growth as a triggering device for applying a diagnostic decision-tree analysis to identify the causes of inadequate weight gain, and combines it with formative research-based protocols that address the causes of the problem, rather than simply treating its short term symptoms. The volunteers use a simple, uniform, highly structured but personally relevant counseling approach with families, while helping their communities and municipalities analyze and act against the causes of poor child growth that are beyond a family's ability to improve. The critical local level implementing unit of the Program consists of a team of about three community volunteers responsible for about 25 children. The Program has been implemented in roughly 1,800 communities.

A 2000 evaluation found that the program was reaching 92 percent of children under two and was effective in improving mothers' child-rearing knowledge, attitudes and practices, including feeding practices and appropriate care-giving and care-seeking practices for children with diarrhea and acute respiratory illness. The program is already being replicated in several countries around the world.

The long-term, annual, recurrent cost of a child under two that participates in the program is US\$6.8. This cost also includes some curative care services provided to children between two and four in the same communities. However, not all these costs are additional, as the Ministry was carrying out some of these services before, and because the better nutrition and preventive care may reduce the need for more costly health services such as hospitalization. The Ministry of Health estimates that the annual incremental cost of the program is about US\$4 per child under two. The preventive care component makes up 78 percent of the cost of the program, and curative care the remaining 22 percent, so while the program integrates preventive and curative care, it emphasizes preventive care.

Source: Fiedler, J. L. (2003): *HNP Discussion Paper: A Cost Analysis of the Honduras Community-Based Integrated Health Care Program*. HNP Discussion Paper. The World Bank.

POSSIBLE PRINCIPLES FOR REFORM OF SOCIAL PROTECTION SYSTEM IN MALAWI

54. In this section, we articulate some ideas towards a new national social protection system for Malawi. The focus is to identify a mix of programs which will reach all major vulnerable groups, and to introduce interventions to help households to better manage risks. Our recommendations are based on the analysis of the characteristics of the poor presented in previous chapters, as well as the lessons from the review of existing safety nets interventions presented in this chapter.

55. Box 9.4 distills best practices in safety net design, which also underpin our recommendations. A critical prerequisite is to have clear objectives for the social protection

program being designed. In general, programs need to be kept as simple as possible to deal with the administrative constraints. Policy consistency and clear flows of information are key, to avoid surprising households and give them time to plan. Improved coordination both within government and with donors will reduce redundancy and improve efficiency.

BOX 9.4: BEST-PRACTICES IN SAFETY NET DESIGN

Smith and Subbarao (2003) review some key lessons for establishing cost effective safety nets in low income countries. These include an array of best-practice suggestions:

- Pure transfer programs need to target very selective groups.
- Safety net expenditures should finance some productive investments to contribute to longer-term poverty reduction.
- Programs need to have multiplier effects and leverage funds to help households reduce risks and/or diversify activities.
- Self-targeting programs can address information problems.
- The timing of these programs is important to provide counter-cyclical funding following shocks. There should be credible ex post transfer systems which are responsive to shocks.
- Programs need to be kept as simple as possible to deal with the administrative constraints in low-income countries. For example, multiple, overlapping programs might be avoided in favor of one or two simple programs that could be more easily implemented.

56. As discussed in Chapter Three, the poor can be usefully separated into two broad groups, chronic and transient. This distinction can inform the design of policy interventions to tackle poverty and improve productivity. Risk is a factor for both groups, but the policy implications are different. In line with this distinction, a comprehensive approach to redesigning the social protection system goes beyond traditional instruments of income support for chronically destitute groups. Instead, it should entail identifying a menu of interventions to: (i) alleviate extreme poverty and assist the chronically poor to build their assets; and, (ii) enhance the productivity and strengthen risk management for the transient poor by providing safety nets to protect them against risks and economic shocks. In addition, given Malawi's dependency on the agricultural sector and its high exposure to large covariate weather shocks and food price shocks (see Chapters Four and Seven), the social protection system needs to operate jointly with the disaster emergency response system and fit within an overall strategy to promote economic growth.

Measures to alleviate chronic poverty and build the assets of the chronically poor

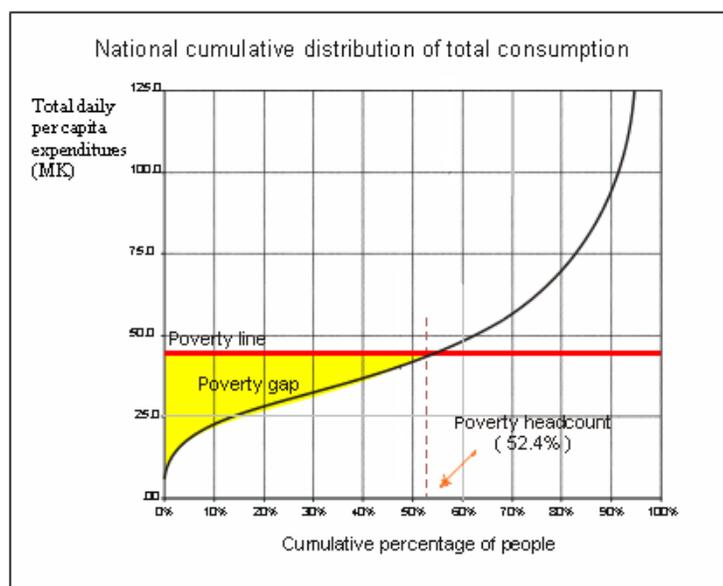
57. Measures to alleviate extreme poverty generally entail direct welfare transfers in the form of food or cash transfers to the destitute. In the case of Malawi, it is also important to explicitly introduce measures to alleviate chronic malnutrition. Policies should also aim to build up the assets of the poor, such as their health and level of education, to allow them to take part in productive economic activities. In Chapter Ten, we will look further at access to health and education services and the distribution of public spending in these sectors across income groups.

Direct welfare transfers to the chronically poor

58. With a poverty rate above 50 percent, it is all but impossible to envisage that a social assistance program in Malawi could provide direct transfers to all those who are poor, such that

they reach an income level at or above the poverty line. The average poor person has income which is about 63 percent of the poverty threshold, which corresponds to the poverty gap of 0.178 (see Chapter Two). Figure 9.7 visualizes this income gap, as the shaded area given by the sum of the distance of each poor individual from the poverty line.

Figure 9.7: Poverty Gap in Malawi in 2005



Source: National Statistical Office, IHS2

Table 9.5: Estimates of the poverty gap in MK

	Poverty	Ultrapoverty
Population (million)	12.2	12.2
Population poor (million)	6.4	2.7
Percent poor	52.4 percent	22.4 percent
Poverty gap index	0.178	0.053
Poverty line	16,165 MK	10,029 MK
Poverty Gap per person in the total population	2,875 MK	533 MK
Total Poverty Gap (MK billions)	35.0 MK	6.5 MK
Total Poverty Gap (US\$ millions)	315.0 USD	58.4 USD
GDP nominal 2004/05 (MK billions)	207.2 MK	207.2 MK
Poverty Gap as percent of GDP	16.9 percent	3.1 percent

Note: Assumes average 2004 exchange rate of US\$1 = MK111.1

Source: National Statistical Office, IHS2

59. Using the poverty gap index, we can estimate the approximate amount of money needed to bring the income of the poor (about 6.4 million Malawians) to the poverty line if there were perfect targeting and no administrative costs. Under these assumptions, the annual costs of bringing all poor up to the poverty line would be about 35 billion MK per year (Table 9.5). Eradicating ultra-poverty would entail much smaller funding (6.5 billion MK) per year, or about 3 percent of annual GDP. However, given that in practice, targeting will never be perfect,

administrative costs exist, and full funding of the poverty gap is unlikely, strategies to assist the poor will need to be carefully crafted, and effective targeting will be key to maximizing success.

60. Malawi's 2002 National Safety Nets Strategy document already envisages the creation of a direct welfare transfer (DWT) program. The DWT was intended to provide support to the destitute who are not able-bodied (and therefore cannot participate in PWP), and those who do not have access to land (and therefore will not benefit from the TIP). The program was never

BOX 9.5: IN-KIND OR CASH TRANSFERS FOR THE ULTRA-POOR IN MALAWI?

In general, cash is the best instrument for direct transfers, provided that markets (particularly food markets) function relatively well. However, this condition is unlikely to hold in remote areas of Malawi (World Bank 2004). In the presence of market failure, however, the value of the cash transfer (in terms of the staple food or other basic commodities) cannot be determined *ex ante*, because of price volatility. Notably, the problem can become serious in food insecure countries, because the purchasing power of cash is lowest when food prices are highest and hunger is at its worst. This situation is evidenced in Malawi by wide intra-annual price fluctuations, with prices swings of 50 – 100 percent being common, even in 'normal' years. As discussed in Chapter Four, these price hikes are driven by supply side constraints due to a combination of limited access to storage facilities, high transport costs, and highly unpredictable government interventions in food markets. As a result, cash transfers would fail to prevent food insecurity and/or alleviate poverty unless these bottlenecks are first resolved.

Recently, some governments in Sub-Saharan Africa have been piloting programs that replace in-kind, food assistance to the ultra-poor with cash (see studies on Zambia and Ethiopia, respectively: World Bank, 2005b, and Adams and Kebede, 2005). The pros and cons of cash versus food aid are summarized below:

Why cash?

- *Cost-efficiency*: Lower costs of delivery for a given level of assistance and faster distribution.
- *Less distortion*: Cash acts as an incentive to local producers and it supports local markets.
- *Flexibility to households*: Cash allows households flexibility in applying the assistance to their specific needs which may not be for more food (for example, allowing households to purchase different varieties of maize, enabling households to invest in assets). Thus, households avoid incurring a value-loss that they may otherwise experience if they sold food aid.
- *Possible price stability*: Distribution of cash assistance paid around the time of harvest may allow households to sell a smaller share of their crop (when prices are lowest) thus reducing the volatility in maize prices and raising farmer incomes.

Why food?

- *Avoid mis-management*: Food may reduce the problem of mis-management of cash at the household level. For example, in cases where men have more power within households, there may be greater propensity to "mis-direct" cash towards unproductive goods, such as alcohol. A second example would be demands from the extended family for remittances of some of the cash which would reduce the net receipt of assistance to beneficiary households.
- *Missing markets*: In remote areas where households lack access to markets, food aid ensures that households get food.
- *Avoid corruption*: It has been proposed that food (or in-kind) assistance will suffer from less corruption among implementing agencies/agents.

In Malawi, over 80% of beneficiaries participating in the 'Sustaining Productive Livelihoods through Income for Assets' (SUPLIFA) project financed by DFID and the World Bank between 2003 and 2005 reported that they would rather be paid in inputs than cash or food, because of the accumulated value of the payment: if used properly, it yields more than its value in grain yields. The fact that it is not as liquid as cash also provides less temptation to spend on other things. This preference could also reflect other reasons, such as failures in fertilizer markets (e.g. fertilizer may not be easily available in the market), or uncertainty about prices, or concerns about being able to keep cash (e.g. pressure from family members for access to cash or options to safely store cash).

started, however. As a result, there is currently no safety net reaching this group of the poor. A large share of these individuals is likely to be located in urban areas. At a minimum, the direct welfare transfer envisaged under the NSFS should be made operational. However, we argue that it would be preferable to revise the NSFS by introducing a basic DWT program to target all the ultra-poor, or chronically poor, identified in Chapter Two. The PWP and TIP should be seen as separate interventions within the safety net framework geared to fighting transient poverty.

61. Cash transfers can be conditional or unconditional. Conditional transfers link the provision of cash to poor households with their utilization of education and health services. Conditional transfers, therefore, require a much more elaborate administrative system to operate (and tend to be more common in middle income countries). As discussed in Chapter Two, about 25 percent of school age children from poor households in Malawi do not enroll in primary education, and lack of money was a major factor driving low enrolment and high drop out rates. Hence, if a capable administrative system can be established, there are good grounds to link the release of cash transfers to children's school attendance. Alternatively, the delivery of unconditional cash transfers could be linked to the participation in specific services: for instance, an immunization drive might be held on the same day and in the same location as the delivery of a cash transfer (Devereux, 2006).

62. Based on the analysis of chronic poverty in Chapter Three, it is recommended that a long-term, regular, reliable and predictable system of direct transfers be introduced to alleviate ultra-poverty (or, at minimum, to target the poorest 10 percent of the population). The direct transfers should consist of a combined transfer of cash and in kind (food and/or agricultural inputs), depending on the characteristics of the household, to provide a predictable long-term support as consumption and income-smoothing measures. In general there is a preference towards cash transfers, since these afford the greatest flexibility to the household. Therefore, it is recommended that whenever feasible, the government introduce cash transfers as a method to make direct transfers. Given the problems in providing cash transfers discussed in Box 9.5, however, the move towards cash transfers will have to be gradual. With the limited development of food markets in Malawi, initially cash transfers may only be used in urban areas and will be especially useful in the months following the harvest, but may have to be complemented (or substituted) by in-kind agricultural inputs distribution during the planting season to agricultural households, and food distribution during the lean season, especially in remote areas.

63. Some analysts argue that providing free fertilizer is a strong tool to alleviate chronic poverty and hunger, because subsidizing fertilizer may be cheaper than donor-supplied food aid for the chronically food insecure (UN Millennium Project 2005). Providing 'fertilizer aid' is argued to be more cost effective than food aid since a given expenditure on fertilizer produces more food in the location in which it is needed, especially through savings in transport costs. This argument, while making a useful point about the value of basing policy/program decisions on the relative costs of alternative interventions, depends on many debatable assumptions. In general, the appropriateness of fertilizer aid and how it might be provided depends on how well food and fertilizer markets are functioning (Box 9.6). More importantly, fertilizer and food aid are very different types of intervention, both in terms of timing and in appropriateness for different groups of people and are not directly comparable.

BOX 9.6: IS FREE FERTILIZER BETTER THAN FOOD AID?

Some analysts argue that providing free fertilizer is a strong tool to alleviate chronic poverty and hunger, because subsidizing fertilizer may be cheaper than donor-supplied food aid for the chronically food insecure (UN Millennium Project 2005). Providing ‘fertilizer aid’ is argued to be more cost effective than food aid since a given expenditure on fertilizer produces more food in the location in which it is needed, especially through savings in transport costs.

This argument, while making a useful point about the value of basing policy/program decisions on the relative costs of alternative interventions, depends on many debatable assumptions, including: (a) that growing conditions allow sufficient yields for the fertilizer investment to “multiply” into the total amount of food needed, (b) that subsidies can be just as effectively targeted to food-deficient households, and (c) that the only policy alternative to fertilizer aid is donor-supplied food aid. Moreover, fertilizer aid of this kind can only deal with the chronically food insecure and cannot be used in emergencies, where there will still be a need to provide relief to vulnerable households (who cannot wait until the end of the growing season for “programmed” food).

In general, the appropriateness of fertilizer aid and how it might be provided depends on how well food and fertilizer markets are functioning. The table below depicts options in a simple dichotomous world of well-functioning and poorly-functioning food and fertilizer markets. The lower right corner of the table depicts a situation not uncommon in remote areas of Malawi, where neither food nor fertilizer markets are working well, and where in fact, a combination of food (especially for emergencies), and possibly fertilizer, might be justified as safety nets. Even though input markets may function poorly, it still should be possible to use such programs to help build private-sector capacity, by contracting fertilizer delivery to private suppliers, and providing technical assistance to input stockists.

Recommended Choice of Food Aid, Fertilizer Aid and Cash Transfers in Different Market Situations

		Food markets	
Fertilizer markets		<i>Function well</i>	<i>Function poorly</i>
<i>Function well</i>	SR: Cash transfers LR: Build household assets (may include soil fertility through market-smart subsidies)		Not applicable in practice
<i>Function poorly</i>	SR: Cash transfers LR: Build household assets (may include soil fertility through market-smart subsidies) combined with measures to strengthen input markets		SR: Food aid and possibly fertilizer aid LR: Build household assets (may include soil fertility through market-smart subsidies) combined with measures to strengthen input and output markets

Note: SR=Short run; LR=Long run

In addition, even in the limited situations where fertilizer provision might be used as a safety net, three additional issues need to be addressed:

- *Efficient use of resources*: Is fertilizer use financially and economically profitable in the longer run? Will expenditures on fertilizer aid pay off, relative to other alternatives (e.g. investment in water harvesting)?
- *Effective targeting*: How can fertilizer be effectively targeted to the poorest and most vulnerable? How can sales of fertilizer by direct beneficiaries be avoided, or does that matter?
- *Market friendly*: How can such programs be designed to promote rather than undermine market development by avoiding disincentives to private-sector investment?

Source: World Bank (2006). *Fertilizer Subsidy Toolkit*. Africa Region, Washington D.C.

Targeting the Chronically Poor

64. Targeting is an issue that is of critical importance to every safety nets program, perhaps with the exception of self-targeted programs like PWP. For the proposed DWT program for the chronically destitute, the challenge for policy-makers is to determine how to identify the ultra-poor such that a social assistance program could be implemented successfully. To illustrate the

inherent difficulties, we explore two of the general approaches presented in Box 9.7: means testing and categorical targeting.

65. Taking the first approach, we assess to what extent ultra poor would be excluded and non-ultra poor would be included in a program that used a proxy means approach. Proxy means testing entails collecting some data on a subset of household characteristics, which can be used to predict the households' poverty status. The data collected should be easy to collect and (at least partially) verifiable upon observation, at the same time being powerful enough to allow for accurate prediction of poverty status (so-called scoring).

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67. Table 9.6 presents results based on a region-specific model which predicts the probability of the household being ultra-poor, using a set of basic household characteristics from the IHS2. The poorest 22 percent of the population, as predicted by the model, are identified and become eligible for assistance. In this proxy means model, more than half of the ultra-poor (as designated using the detailed data in the IHS2) would be successfully targeted. This reflects nearly 13 percent of the total population. The majority of non-ultra poor was correctly excluded from the program (68 percent of the population). For the remaining population, we label these as errors of inclusion and errors of exclusion. 43 percent of the ultra poor (10 percent of the total population) would be incorrectly excluded from assistance (based on this particular model specification). Our error of inclusion is 15 percent of the non-ultra poor (10 percent of the total population) who would have been erroneously labeled as eligible for assistance, although they are not ultra poor.

Table 9.6: Targeting using proxy means testing (percent)

<i>Predicted welfare status based on proxy means test</i>	Welfare Status of the Population According to the IHS2		
	Ultra poor	Non-Ultra Poor	Total
Population <i>included</i> in program	12.7 (successful targeting)	9.9 (inclusion error)	22.5
Population <i>excluded</i> from program: predicted to be non-ultra poor based on proxy indicators	9.7 (exclusion error)	67.7 (successful targeting)	77.5
Total	22.4	77.6	100.0
Under-coverage: percent of ultra-poor excluded	43.3	-	
Leakage: percent of non-ultra poor included	-	44.0	

Note: Predicted ultra poor status is based on predicted probabilities of being ultra poor from a regression model of IHS2 ultra poor status regressed on household demographics, characteristics of the household head, asset holdings, and labor supply characteristics, run separately for urban, Rural North, Rural South, and Rural Center.

68. Proxy means tests can be demanding both analytically and operationally. They can require high administrative costs, as the proxy means indicators have to be collected in order to determine the household's eligibility. It seems unlikely that the government will have the resources and capacity to implement this nation-wide.

Box 9.7 TARGETING OF SOCIAL ASSISTANCE PROGRAMS

Targeting the groups identified for assistance is a critical aspect of the implementation of social assistance programs, especially given the high degree of poverty and vulnerability coupled with strong budgetary constraints in Malawi. The range of methods for targeting is varied. The goal of these methods is to correctly and efficiently identify which households are poor (or ultra poor) and which are not. The performance of the targeting process is often assessed in terms of under-coverage (errors of exclusion) where the poor (eligible) are not targeted and leakage (errors of inclusion) where the non-poor (non-eligible) receive the program nonetheless. Coady et al. (2004) identify several common targeting methods used in practice to distribute assistance to the poorest:

- *Individual/household Assessment.* This method entails the direct assessment of the household or individual's eligibility for the program. Within this category of method there are several options as to how this household-specific assessment can be undertaken:
 - ❖ *Verified means testing* which collects (nearly) complete information on a households' income or wealth, and verifies against independent sources (such as pay stubs or income and property taxes). This form of household assessment is extremely rare in low income countries.
 - ❖ *Simple means testing* which can entail collecting detailed income data or a government social worker's qualitative assessment of whether the household is poor.
 - ❖ *Proxy means testing* entails collecting a subset of household characteristics (such as demographic structure and dwelling amenities) which can be used to construct a poverty score. The process of converting the proxy indicators into a poverty score is based on analysis of the correlated of poverty in the detailed household survey data. Coady *et al.* (2004) describe proxy means testing as administratively demanding and most often used in middle income countries.
- *Community-based targeting* whereby a group of community members decide which households in the community will receive the program. See Conning and Kevane (2002) for a review of community-based targeting.
- *Categorical targeting.* This method refers to a process by which all individuals/households in a specified category are eligible for benefits. It is sometimes referred to as statistical targeting or group targeting. Examples of common categories include: age and/or gender of the household head, ethnicity, land ownership, demographic composition, or geographic location. The extent to which categorical targeting works depends on the differential in poverty across easy-to-categorized groups.
- *Self-targeting.* Some programs have universal eligibility, but the design is such that poorer households will select into the program, such as low-paying public works projects or in-kind transfers of "inferior" in-kind products.

These different targeting methods can be combined and used in different combinations or sequences. For example, consider a program targeted in two-stages. In the first stage, one could use geographic targeting (where the poorest districts may be allocated larger shares of project funding). In the second stage, community-based targeting could be used to select households within villages. Alternatively, one could envision a targeting scheme whereby there is community-based targeting but with guidance proposing prioritizing assistance to preferred categories (such households with chronically ill adults).

In their review of targeting methods across a sample of programs for which they had sufficient data, Coady et al. (2004) find poorer countries tend not to use means testing but more often use a combination of community assessments, categorical targeting and self-targeting.

69. An alternative method to target the poor might be to classify types of households or individuals based on one or two observable traits, requiring no econometric modeling. This is categorical targeting. The discussion in Chapter Two highlighted several household characteristics associated with higher probabilities of poverty and lower per capita consumption. Such characteristics include: female headship, low education, large number of household members, presence of children, high dependency ratios, small holders, and more distant location. By more narrowly defining the traits shown to be associated with poverty as well as using some traits which are anecdotally associated with poverty (such as households with no able-bodied adults), we can create a list of specific characteristics which could then identify individuals eligible for social assistance.

Table 9.7: Poverty rates for categories of households

<i>Household characteristic</i>	percent of population	Poverty rate among those with characteristics	Poverty rate among those without characteristics
Female headed with no adult males	9.9	57.7*	51.8
Highest level of schooling less than 3 years	12.2	61.0*	51.2
Large household: 9+ household members	11.7	65.0*	50.7
Many children: 6+ children	6.8	72.4*	51.0
High dependency ratio: >2 or no working age adults	12.8	69.6*	49.9
Remote location: more than 60 minutes to trading center	11.7	62.9*	51.0
Young (22 or less) or old (70 or older) household head	9.4	50.0*	52.7
Smallholder: <.08 hectares per capita	10.7	66.1*	50.8
No able-bodied working-age adult**	5.2	49.5*	52.6

Notes: * indicates statistical difference at 1 percent in poverty rate between those in households with and without the characteristics. ** This is defined as having at least one working age (15-64) adult who is able to sweep the floor or walk 5 kilometers.

Source: National Statistical Office, IHS2.

70. From the long list of possible candidates, we choose 9 traits, listed in Table 9.7. Most of these traits, partly by design, capture about 10 percent of the population. For example, about 10 percent of the population resides in households with more than 8 household members. The poverty rates among each of these categories are significantly higher than those not in the category, with one exception being households with have no able-bodied adults. These households are actually *less* likely to be poor than other households. While these characteristics do individually identify households more likely to be poor, more than half of the entire population (54 percent), have at least one of the traits listed. Thus, even crude targeting based on these characteristics would result in a substantial portion of the population being eligible.

71. Moreover, in addition to making over half the population eligible, using these categories would still result in a sizeable portion of the ultra-poor being excluded. As shown in the first panel of Table 9.8, one-third of the ultra-poor would be excluded if targeting was done on the basis of being in any of the first 8 categories in Table 9.7. Taking a subset of these categories, we can compare the ultra poverty rates among those included and excluded (the second panel of Table 9.8). Using six of the categories to classify households, we find that 45 percent the entire population would be deemed eligible. However, 70 percent of the eligible population would be

non-ultra poor. This holds even if we take some alternative definitions for eligibility based on these categories, for example, defining eligibility on the basis of having two of the eight characteristics, or having three of the eight characteristics (third panel of Table 9.8).

Table 9.8: Categorical targeting under alternative scenarios

Welfare Status of the Population (IHS2 data)			
	Ultra poor	Non-Ultra Poor	Total
<i>Predicted welfare status based on belonging to first 8 categories in Table 9.7</i>			
Population <i>included</i> based on categorical targeting	15.1 (successful targeting)	37.4 (inclusion error)	52.5
Population <i>excluded</i> based on categorical targeting	7.3 (exclusion error)	40.2 (successful targeting)	47.5
Total	22.4	77.6	100.0
Under-coverage: percent ultra poor who are excluded	32.6 percent	-	
Leakage: percent of recipients who are non-ultra poor	-	71.2 percent	
<i>Predicted welfare status based on belonging to 6 of 9 categories in Table 9.7^a</i>			
Population <i>included</i> in program: based on categorical targeting	13.5 (successful targeting)	31.4 (inclusion error)	44.9
Population <i>excluded</i> from program: based on categorical targeting	8.9 (exclusion error)	46.2 (successful targeting)	55.1
Total	22.4	77.6	100.0
Under-coverage: percent ultra poor who are excluded	39.8 percent	-	
Leakage: percent of recipients who are non-ultra poor	-	70.0 percent	
<i>Predicted welfare status based on belonging to at least 2 of first 8 categories in Table 9.7</i>			
Population <i>included</i> in program: based on categorical targeting	8.1 (successful targeting)	14.5 (inclusion error)	22.5
Population <i>excluded</i> from program: based on categorical targeting	14.4 (exclusion error)	63.1 (successful targeting)	77.5
Total	22.4	77.6	100.0
Under-coverage: percent ultra poor who are excluded	64.0 percent	-	
Leakage: percent of recipients who are non-ultra poor	-	64.3 percent	
<i>Predicted welfare status based on being in 3 or more of the first 8 categories in Table 9.7</i>			
Population <i>included</i> in program: based on categorical targeting	3.2 (successful targeting)	4.5 (inclusion error)	7.7
Population <i>excluded</i> from program: based on categorical targeting	19.2 (exclusion error)	73.1 (successful targeting)	92.3
Total	22.4	77.6	100.0
Under-coverage: percent ultra poor who are excluded	85.7 percent	-	
Leakage: percent of recipients who are non-ultra poor	-	58.5 percent	

Note: (a) The categories targeted are: female headed households with no adult males, households with highest schooling less than 3 years, households with 9+ members, households with 6+ children, households with landholdings <.08 acres per capita, and remote households (more than 60 minutes to a trading center).

72. Several points can be made from the analysis above. First, proxy means testing, in addition to being impractical, may result in sizeable under-coverage and leakages. Second, categorical targeting, unless restricted to very few categories, may encompass too large a share of the population to be used literally. Third, even when categories are more narrowly defined, there will still be significant mis-targeting. Fourth, both proxy means modeling and categorical targeting are based on models of current consumption levels that identify current ultra-poverty status. They can't separate out the ultra-poor who have been persistently poor for many years, those who are systematically getting poorer, or households who have temporarily experienced a shock but eventually recover partially or fully.

73. Finally, it should be noted that this section has assessed ultra poverty based on consumption expenditures. There are numerous measures of well-being for which deprivations would also reflect the concept of ultra poverty. For example, malnourished children or school-age children who are not enrolled, regardless of whether they reside in high-income households, might be labeled deserving of social assistance both as a means of ensuring a minimal living standard as well as investing in the next generation.

74. An alternative to strictly targeting using proxy means or categories is community-based targeting. This entails a system by which communities (through, for example, a village development committee), decide on which households will receive social assistance. Coady *et al.* (2004) note that perhaps the most persuasive rationale for community-based targeting is that it has lower costs (avoids the need for large-scale data collection) and may provide better data than can be collected in a short household survey (including the length of time households have been poor and the prospects for income growth). It may work relatively well in conjunction with categorical targeting when categories that describe disproportionately poor groups are too numerous given the scope of social assistance funds. Communities may be able to distinguish within categories to isolate those who are poorer. Likewise, it may work well using a two-stage model with geographical targeting identifying poorer regions in the first stage.

75. Of course, there are circumstances in which community-based targeting won't work well, as detailed in Box 9.2 (See Coady *et al.*, 2004, and Conning and Kevane, 2002). Depending on how it is implemented, this system can perpetuate local power structures whereby leaders direct benefits to their families or within their social networks, regardless or need. It may also result in reinforcing patterns of exclusion of certain groups (e.g. disabled, unwed mothers).

76. Based on the analysis above, social assistance to the chronically poor in Malawi should encompass two-stage targeting. Geographic targeting should focus levels of assistance with the national poverty share of the district (or region). In the second stage, as described in the analysis above, proxy means testing is probably impractical. Categorical targeting alone likewise suffers from high rates of leakage and under-coverage. The proposed mechanisms for household-targeting would then be to use community-based efforts. Conning and Kevane (2002) argue that the best community-based targeting outcomes are likely achieved, in part, through (i) clearly stated rules on how the community should organize to decide on who gets the assistance, and (ii) targeting guidelines based on the profile of the ultra-poor.

77. Given the finding that currently almost all social protection programs in Malawi are poorly targeted, it is also recommended that a series of pilot programs be designed to explore ways to make targeting more effective within this two-stage method.

Interventions to alleviate malnutrition

78. Malnutrition has a profound impact on the productivity of the country by reducing capacity to learn and work throughout life. Hence, there is a strong rationale to strengthen the programs to combat malnutrition. More funding is needed to address behavior change and nutrition education at community level, and the Honduras Community-Based Integrated Child Care Program discussed in Box 9.3 above could be a model for providing better nutrition/health services to young children in Malawi.

79. Feeding programs should be concentrated on children under 5 (and especially children under 2) and pregnant women, since these categories are most vulnerable to malnutrition because they have the highest nutritional requirements of any age group. In addition, children under 2 are dependent on their caregivers (who may not be knowledgeable or who don't have the time to feed them) and women are generally given low priority in obtaining their share of the family food supply. Food distribution to non-pregnant adults is a low priority.

80. Improving children's micronutrient status will have an impact on the quality of the children's life by improving their health, and it will keep them in school, thereby increasing their skill level. Nevertheless, school feeding programs are a very expensive way to increase school attendance and learning rates, and an expensive way to improve nutrition. As such, feeding programs for school children are not a priority from the perspective of malnutrition and are not recommended here as part of the social protection program.

Other interventions to build the assets of the extreme poor

81. Measures to alleviate chronic poverty should not be limited to direct transfers, but should also build the assets of the extreme poor. For instance, the government could subsidize access to public services for the extreme poor, such as health, education, (discussed in Chapter Ten) and agricultural extensions (see Chapter Seven) by (i) introducing/expanding programs to provide bursaries to cover the cost of basic education, (ii) providing free access to drugs and hospitalization, and (iii) reserving a share of the time of agriculture extension agents to assist ultra-poor smallholders.

Measures to enhance productivity and strengthen risk management for the transient poor

82. Given that the majority of poor households in Malawi receive most of their income in the agricultural sector, productivity-enhancing safety net interventions will help boost agricultural productivity of the poor smallholder farmers. The social protection framework in Malawi should also directly address risk-mitigation for farm households. In both instances, social protection programs designed to assist households in terms of their agricultural income should be carefully aligned with the overall agricultural policies.

Productivity-enhancing interventions for smallholder farmers: fertilizer distribution (through free Starter Packs and/or subsidized vouchers)

83. The analysis in Chapter Seven suggests that agricultural productivity-enhancing interventions for the poor smallholders should include policies that increase access to irrigation and the use of fertilizers. Since the former is not easily amenable to a safety net support program, here we focus on interventions to boost the use of fertilizers.

84. The operation of the fertilizer voucher-subsidy should be redesigned to follow the principles for market-smart subsidies (see Chapter Seven). In addition, the social protection framework should specifically address the gap in coverage of the current voucher-subsidy program, which omits cash-constrained small holders. The latter are unlikely to be covered by either social assistance to the poorest (discussed above), or public works programs (to-date limited in coverage and not designed to guarantee annual income in replacement of farm income). This may consist of a re-introduction of Targeted Starter Packs and/or cash assistance targeted to the poorest sections of the population. Administrative costs and targeting can also be improved through self-targeting mechanisms that increase the likelihood that benefits will accrue to the poor and ultra-poor and through use of private sector channels. The input-for-work programs mentioned above, where a fertilizer-voucher is received in exchange for work on rural roads is the most promising initiative to date in Malawi (but it is only relevant where there is a functioning input market).

85. Usage of free fertilizer distribution appears to be associated with lower efficiency, compared to fertilizer that has been purchased (see Chapter Seven). While this may be due to past problems in the late delivery of the TIP input packs, it is also possible that poor smallholder farmers do not have adequate knowledge on how to use the fertilizer. Hence, it is also critical to provide clear instructions on the use of the fertilizer, jointly with the voucher or pack.

Measures to mitigate risk faced by the poor, with an emphasis on agricultural risks

86. Poor households in Malawi face major risks, and there is an important role for risk management in poverty alleviation and prevention strategies. As we saw in Chapters Three and Four, the most severe and the most frequent shocks to households derive from agricultural risk. As such, strengthening risk management for the transient poor should include measures to: (a) mitigate risk with an emphasis on agricultural risks; (b) aid those affected by shocks; and (c) manage the response to large-scale natural disasters, and large fluctuations in food prices. We examine each of these in turn.

87. There are numerous economic strategies that can assist households in mitigating agricultural risks *ex ante*, as well as promote economic growth in general, including developing fertilizer and output markets, improving access to irrigation, increased access to credit, and providing formal insurance markets to smallholders. These policies constitute the most effective interventions to permanently reduce the risks facing households, thereby promoting poverty reduction in general within an overall framework for economic development.

88. As discussed in Chapter Seven, there are strong arguments to invest on irrigation, and small scale irrigation in particular. Irrigation would contribute to major improvements in productivity both directly improving yields, and through its reduction of the risk faced by farmers.

89. At the farm level, given that irrigation will not be possible for many farmers and that many farmers will continue to face the severity and prevalence of weather-related shocks for years to come, the promotion of weather-based index insurance could help significantly to protect peoples' livelihoods, and smooth their income streams (see Chapter Seven for a detailed explanation of how weather insurance might work in Malawi). Weather-indexed insurance products can be reinsured in the global weather-risk market, effectively transferring the risk from Malawi to the international reinsurance and capital markets. Weather insurance can facilitate farmers' access to credit and thereby allow them to purchase the inputs which can boost productivity.

90. As discussed in Chapter Seven, in Malawi drought insurance has already been successfully piloted in 2005/06 among 900 groundnut farmers in four areas of Malawi, marking the first time such index-based weather insurance policies have been sold to smallholder farmers in Africa. This innovative insurance instrument has the potential to make a significant improvement in farmers' ability to manage weather and price risk in Malawi and contribute to the food security needs of the country. If successful, it may be scaled up to other crops and other areas of Malawi and elsewhere in Africa. A similar pilot in India in 2003 has been expanded from an initial 230 farmers to now give more than 250,000 farmers access to weather insurance.

91. In addition to facilitating access to credit for smallholders as discussed Chapter Seven, therefore, there may be a rationale for the government to adopt this type of instrument as a productivity-enhancing intervention. In this context, the government could consider subsidizing the insurance premia for poor smallholders to encourage the adoption of this instrument by the transient poor.

Measures to assist households which have been hit by a shock

92. As part of a comprehensive social protection scheme, households should be protected from economic shocks that can push them into poverty. The recommendations here highlight two of the most common and severe shocks demonstrated to affect Malawian households: (i) emergency relief for large-scale covariate shocks (mainly weather related), and (ii) assistance to households experiencing idiosyncratic shocks (mainly related to illness and death of a household member).

93. For covariate shocks, such as crop failure due to drought, emergency food-aid has far been the hallmark of the social protection system thus far. However, experience has shown that food aid is often delivered late; there are leakages in the program (under-coverage of needy households), and generally provided only a small amount of assistance. The social protection framework needs to thoroughly address these long-standing criticisms. For a successful social assistance program, it will be paramount to establish clear targeting rules and administrative procedures *before* the onset of a food emergency.

94. A significant number of households suffer from shocks related to household-specific events rather than community-wide ones. The existing PWP program can assist households affected by an idiosyncratic economic shock (such as crop failure related to illness, theft, etc., rather than drought). PWPs provide self-targeted employment in times during lean seasons of under-employment. As discussed above, however, the current size of PWP programs in Malawi is limited, and inadequate to offer protection to all in need of temporary support. PWP could be scaled up as the main safety net to cope with localized harvest failures (affecting only some districts), as an alternative to food-aid distribution. There are several advantages in pursuing this approach, since it is likely to be more cost effective, and will foster market development (and thereby long term food security) by increasing demand for local produce.

95. As discussed above, the PWPs target households with able-bodied adults, and only provide a useful safety net during the non-agricultural season (when households' have spare labor without cutting time out of their productive farming activities). Therefore, in addition, a safety net for households uncovered by PWPs (those with shocks during peak seasons when PWPs are largely not operative, and assistance for households lacking able-bodied adults) should also be built into the overall social protection program.

Managing risk at the national level ex ante, and disaster management interventions ex post

96. As noted in the discussion above, much of the approach by the government and donors in addressing weather shocks is to react to an event, rather than managing the risk *ex-ante*, resulting in a less efficient response replete with distortions, wasted resources and rent seeking. The social protection scheme in Malawi should incorporate features designed to mitigate the impact of weather shocks, rather than respond to actualized shocks. Namely, this entails policies that strengthen resistance to weather shocks, such as expanding investments in water harvesting and small-scale irrigation, promoting cultivation of drought-resistant crops, promoting research and use of drought-resistant maize varieties, etc.

97. Inevitably, Malawi's exposure to extreme climatic shocks, will often result in large covariate shocks to a large number of households, and a well-functioning social protection system will effectively assume those risks. For instance, following a drought, the government may have to scale up relief food distribution. Or it may intervene in the market to minimize extreme price spikes or troughs. However, these interventions expose the government to substantial financial risks, and ways to best manage such risk should become an intrinsic part of the social protection plan.

98. A macro-level, nation-wide maize production index could form the basis of an index-based insurance policy to trigger a contingent credit line for the government in the event of food emergencies.¹⁷¹ This instrument would bring two substantial benefits: (i) it would ensure an

¹⁷¹ The payout from the insurance would then need to be distributed. Given the large price swings experienced in the past at times of food shortage in the country, it is recommended that for the time being, relief interventions should mostly continue to be in-kind. In parallel, the government should undertake a strategy to build up the functioning of food markets by fostering the operation of the private sector across the country and stopping erratic interventions in maize markets.

early line of financing to respond promptly to an emerging food emergency; (ii) it would limit the pressure on government budget in the event of a crisis. The approach is similar to the one for the micro-level weather insurance contract for small holder farmers discussed above, and more details are provided in Annex 9A. Such insurance would not cover smaller localized droughts which affect only a few of the stations. The government may be able to cope with small, localized droughts by transporting food-supplies from other districts of the country and by sourcing government budget reserves.

99. A different type of market-based instrument, that can help the government manage its exposure to price risk in the face of a food crisis, is the use of financial derivatives in the South African Futures Exchange (SAFEX). Gilbert and Dana (2005) show that the government can purchase call options based on the SAFEX commodity exchange to help cap the cost of imports during a possible food crisis. In the past, during a crisis, the government imported at a time when the maize price is high, and its decision to import has driven prices higher.

100. An options contract can be designed as a contingent import strategy used in the following way: the government could buy an ‘option’ to purchase maize such that if local prices rise to an unaffordable level in the commercial markets, and maize imports are not moving in quickly enough to meet the needs, the government could quickly trigger additional imports. When the option is exercised, or ‘called,’ the maize that is imported could then be resold directly to local traders or through commercial markets. Alternatively, maize purchased through this mechanism could also be used to meet humanitarian needs. Reflecting the need of the government to ensure that physical food can be made available in the country, the structure of the derivative can be customized to combine price protection on the SAFEX maize market, and lock in transport costs, so the government obtains price protection in local, delivered terms in Malawi.

101. The government of Malawi’s use of a SAFEX option¹⁷² to structure a contingent import strategy represents the first such application of the tool in the region, and regional traders are positive about the approach and interested in exploring other applications (Box 9.8). Within the region, traders and banks are supportive of greater use of this strategy in the future, and believe it has a number of advantages in addition to the value of hedging prices for imports.

¹⁷² The contract is an over-the-counter physical option contract, which provides the government with a price ceiling on the cost of maize delivered to Malawi. The price protection is based on the two major components: SAFEX price and transport costs. The contract is an “at-the-money” contract, meaning that the prevailing SAFEX prices are used to set the price ceiling, or strike price, when the contract is signed. If SAFEX prices move lower than the strike price, government could exercise the option at the lower market level and enjoy the cost savings of the lower market price. If SAFEX prices move higher than the strike price, government would not pay more than the strike price. The transport cost component is locked in, at current levels when the contract is signed, and could not move higher than the prices agreed in the contract.

Box 9.8: INNOVATIONS IN EX-ANTE RISK-MANAGEMENT AGAINST DROUGHT

Malawi is taking the lead in Southern Africa in looking for ways that market-based tools and risk management thinking can replace traditional, *ex post* reactions that can be costly, inefficient, and difficult to manage when the country is already in a food security crisis. Two innovative pilot projects to improve its risk management related to food crops deal with weather risk and maize price risk. These examples illustrate new ways in which the government, in partnership with development agencies, can approach the theme of food security. The lessons learned from these pilots will be helpful in further improving the management of agriculture-related risks.

Pilot #1: The government of Malawi Buys Insurance against Drought

The government is working to pilot an *ex-ante* risk-management system to protect the livelihoods of Malawians vulnerable to severe and catastrophic weather risks. The pilot would use a weather derivative to ensure contingency funding for an effective aid response in the event of a drought (as defined by contractually specified severe and catastrophic shortfalls in levels of rainfall). The government would, in effect, buy weather insurance from an international provider. The contract would provide contingency funding in case of an extreme drought during the following agricultural season.

This pilot project is the first step in a process leading towards *ex-ante risk* management by the government, donors and private-sector international risk markets. The greater timeliness of event-specific contingency funding would make aid more efficient at saving livelihoods, by protecting vulnerable populations against productive asset depletion in response to severe and catastrophic weather shocks. From the perspective of food aid donors, it would obviate the need for fund-raising in response to crises, thereby making the response more efficient and timely. The funds from an eventual pay out of the insurance in the case of drought would be channeled through institutional systems for disaster response, either directly to the hungry, or to safety net systems.

Pilot #2: Using SAFEX Financial Derivatives to Manage the Price Risks Associated with Food Crisis

During a food shortage, local maize prices typically increase, exacerbating the risk of hunger. In the past, the government has attempted to manage this problem by subsidizing the price of maize, or using other market interventions. However, such responses carry large costs, both financially and in terms of negative impacts on local and regional trade.

In response to the severe food shortage in 2005/06, the government of Malawi took an innovative approach to the risks associated with import operations. First, the Malawi Vulnerability and Assessment Committee (MVAC) created two scenarios for humanitarian need, based on two potential ranges for local prices. This clear linking of the relationship between local prices and vulnerable populations led the government to take a strong interest in price volatility. In September, the Ministry of Finance purchased a call option based on the South African SAFEX commodity exchange to help cap the cost of imports. It was estimated that the volumes of imports needed to supply Malawi would range from 200,000 to 300,000 MT.

The option contract was originally designed to be a contingent import strategy: if local prices were rising to an unaffordable level in the commercial markets, and maize imports were not moving in quickly enough to meet the needs, the government could quickly trigger additional imports. When the option was exercised, or "called," the maize that was imported could then be resold directly to local traders or through commercial markets. Alternatively, maize purchased through this mechanism could be used to meet humanitarian needs.

In practice, the government exercised the contract as prices were increasing, and allocated the majority of the maize to the humanitarian pipeline, where there were severe shortages. During the delivery period, spot prices rose USD \$50-90/mt above the ceiling price of the contract, due to increases in the SAFEX white maize price and transport costs. The option structure, supplied to the government by a South African bank based on a process of competitive bidding, was customized to meet the needs of the government. It combines price protection on the SAFEX white maize market, and locks in transport costs to Malawi. In this way, the government of Malawi was able to obtain price protection in local, delivered terms. The World Bank's CRMG provided technical assistance to the government and the premium for the option contract was supported by the UK's Department for International Development (DFID).

102. Using the same instrument, Strategic Grain Reserves can be restructured so that (at least part of) the management of physical stocks and storage is done by private sector banks and traders, who then write call option contracts for sale to government if needed in the future. In other words, the government can minimize the substantial costs of holding a large physical grain reserve, and hold instead option derivatives allowing it to ‘call’ on additional quantities if needed. This type of policy in which options for future purchases are provided through futures market hedges is sometimes known as ‘synthetic storage’.¹⁷³ The term reflects the fact that, in taking a futures derivative, the government is essentially requiring the market to undertake storage on its behalf. The usage emphasizes the fact that a futures-based policy does not reduce the requirement for inventory, but simply transfers that responsibility to the market. Synthetic storage will be advantageous relative to physical storage in those circumstances in which the market can carry inventory at lower costs than government, which is generally the case, and/or has access to lower cost finance than government.

103. The futures-augmented import strategy has the potential to be effective because imports are only required in the event of a harvest shortfall, in which case the market price will have risen, thus yielding profits on the futures position. However, as Gilbert and Dana (2005) demonstrate, although the strategy reduces import costs in the event of a shortfall, it does this by spreading these costs over good and bad years, and not by magically eliminating them. The balance of costs and benefits depends on the frequency of shortfalls and the extent to which the price rises in the event of a short fall.

104. Synthetic storage using SAFEX white maize futures appears to offer significant cost reductions relative to grain stockpiles for Malawi. These savings are most apparent in relation to regional production shortfalls (e.g. 2002); but are less clear in relation to sub-regional or national shortfalls. Physical and synthetic storage are both prohibitively expensive once a shortfall is experienced, however, so neither can offer protection against a second poor harvest. A backup scheme is therefore required to offset this possibility.

¹⁷³ Synthetic storage is the process by which a firm or an institution transfers inventory to the derivatives market. This is most easily done by holding a long futures position or a call option with expiration date corresponding to the anticipated physical requirement. At expiration, the institution either takes delivery on the contract or (more likely) closes out the position and uses the resulting revenue to offset the grain purchase cost. Increased long interest puts upward pressure on prices at a particular delivery date, creating a spread between nearby and future delivery months. The spread creates incentives for storage, which is typically financed by financial institutions.

CHAPTER 10: ACCESS TO PUBLIC SERVICES AND THE DISTRIBUTION OF BENEFITS FROM PUBLIC EXPENDITURES IN HEALTH AND EDUCATION

INTRODUCTION

1. This chapter provides an assessment of poor households' access to health and education services, disaggregated by gender and geographical location. This assessment is complemented by an analysis of the distributional impact of public spending, to determine the extent to which public spending in education and health benefits the poor. The aim is to quantify the distribution of government subsidies across income groups. Public expenditure on agricultural extension services was also analyzed but is treated in Chapter Seven, which focuses specifically on agriculture.

2. The next section focuses on education, distinguishing between the primary, secondary and tertiary sub sectors. The following section examines the provision of health services, distinguishing between use of public health facilities and hospitalization. Each section first provides an assessment of community level access and household level access (i.e. utilization rates), using data collected in the IHS2, including the IHS2 Community Survey. This is followed by an analysis of average benefit incidence to assess the distributional impact of public spending. The methodology is founded on the principle that the distributional impact of public spending depends on the 'behavior' of government in allocating resources among competing uses and also on the behavior of households in accessing publicly provided services. Details of the methodology are presented in Annex 10A. A detailed analysis of the health and education sectors has been carried out as part of the 2006 Public Expenditure Review (PER). Drawing on the PER analysis, the chapter concludes by making several recommendations to improve access to education and health services for the poor

ACCESS TO EDUCATION SERVICES AND BENEFIT INCIDENCE ANALYSIS OF PUBLIC SPENDING IN THE EDUCATION SECTOR

Primary Education

Access to and Primary Education

3. Access to primary schools is fairly good for most of the population, and it is evenly distributed across the country. Within the communities sampled in the community survey, 41 percent had a government primary school within their community, 36 percent had a primary school within 2 km of their community and 23 percent had a primary school more than 2 km from their community (Table 10.1). More poor communities have primary schools within the community (45.5 percent) than non-poor communities (37.5 percent). When combining primary schools within the community and within 2 kms of the community, however, more non-poor communities (78.9 percent) have closer access than poor communities (75.5 percent).

4. Within the rural areas, while the North Region has the most primary schools within their communities, communities in the Central Region have the most primary schools both within

their communities and within 2 km of the community. The South Region has the fewest communities with close access to primary schools: almost one third of communities in the South Region have schools that are more than 2 km from the community, and this is true for both poor and non-poor households.

Table 10.1: Distance to Nearest Government Primary School (percent)

	Within the community	Within 2 km of the community	More than 2 km from the community
Malawi	41.1	36.2	22.7
Non-Poor	37.5	41.4	21.2
Poor	45.5	30.0	24.5
Urban	33.3	43.1	41.1
Rural Overall	42.3	35.2	22.6
Rural North	54.2	20.8	25.0
Rural Central	47.4	38.0	14.6
Rural South	34.2	37.3	28.5

Source: National Statistical Office, IHS2 (Community Survey)

5. The number of teachers per school is at least 4 times higher in urban areas than rural areas.¹⁷⁴ However, urban schools reportedly have almost three times as many students as rural schools.¹⁷⁵ Schools in poor communities have half the number of teachers (9.6 on average) that non-poor schools have (19.6 on average). Poor communities also have fewer students on average than non-poor communities, but it is not clear if this is because there are fewer students in the communities, or if fewer students can afford to attend primary school.

Table 10.2: Number of Teachers and Students in Government Primary Schools (average)

	Average number of teachers per school	Average number of students per school	Average pupil/teacher ratio
Malawi	15.0	1,115	74
Non-Poor	19.6	1,339	68
Poor	9.6	846	88
Urban	46.5	2,779	60
Rural Overall	10.4	865	83
Rural North	8.8	542	62
Rural Central	10.0	815	82
Rural South	11.2	1,010	90

Source: National Statistical Office, IHS2 (Community Survey)

Note: Ratio is the average number of students to average number of teachers per school (see foot note 162).

6. The average ratio of students to teachers varies substantially across the regions, from around 60:1 in the urban areas and in the North region, to around 90:1 in the South region.¹⁷⁶ Such variation at the regional administrative level suggests the existence of substantial variations across individual schools. This is confirmed in recent education sector studies (World Bank

¹⁷⁴ Given the fact that frequently there are large discrepancies between rural and urban areas, we have disaggregated regional data to treat urban households/communities separately whenever the data allows, and unless noted otherwise, the data presented in Tables follow this convention (as for other chapters in this poverty assessment).

¹⁷⁵ It is important to remember that these figures were reported in interviews with local leaders in the Community Survey, and were not verified at the local schools.

¹⁷⁶ These ratios provide an approximation of average pupil /teacher ratios (PTR). Actual PTRs cannot be calculated using the IHS2 data because the community questionnaire did not collect the information with sufficient detail.

2004). Furthermore, primary schools close to poor communities appear to have substantially higher ratios (88 students per teacher) than non-poor communities (68 students per teacher).

7. Nationally, enrollment in Government primary education is pro-poor, with proportionately more children from poor households in government primary schools than children from relatively better off households (Table 10.3). For example, out of all the pupils that enrolled in primary school in the year 2004,¹⁷⁷ 30 percent came from households that are in the lowest quintile. On the other hand, only 9 percent came from households that are in the richest quintile. For both boys and girls, enrollment in government primary schools is biased towards the poorer households. However, while enrollment in government primary schools is more biased towards the poor in the rural areas, the opposite is true in the urban areas: only 15 percent of those enrolled in primary school in urban areas were from households in the poorest quintile, compared to 24 percent were from households in the richest quintile. This is probably just a reflection of the fact that there are proportionately more rich households in urban areas than in rural areas. Otherwise, one would expect that the prevalence of private primary schools in urban areas would make government primary schools only attractive to the poor.

8. The results also show that enrollment in primary school is pro-poor in all the rural areas of the three administrative regions of the country, although the pro-poor bias is less pronounced in the central region. As can be seen from the table, of the pupils enrolled in primary school, 31 percent and 40 percent were from households in the lowest quintile in the North and South regions, respectively, whereas only 23 percent were from the lowest quintile in the Central region.

Table 10.3: Proportion of students enrolled in government primary school, by quintile

	Poorest 20%	2 nd Quintile	3 rd Quintile	4 th Quintile	Richest 20%	Total
Total	30	25	20	15	9	20
By Gender						
Male	30	25	21	16	9	21
Female	30	26	20	15	9	19
Urban vs Rural						
Urban	15	16	20	24	24	17
Rural	31	26	20	14	8	20
By Region (rural)						
Rural North	31	27	19	15	7	20
Rural Centre	23	26	22	19	10	22
Rural South	41	27	18	9	5	19

Source: National Statistical Office, IHS2

Benefit Incidence of Public Spending on Primary Education

9. Next we look at how monetary benefits from public expenditure on primary education vary across income groups. Just like access, monetary benefits from government expenditure on primary appear to be pro-poor. Table 10.4 shows that nationally, the poorest 20 percent received only 26 percent of the government subsidy that went to primary education. On the other hand,

¹⁷⁷ As the IHS2 survey run from March 2004 to March 2005, about three months of the respondents actually refer to 2005 enrollment.

the richest 20 percent received only 10 percent of the subsidy. For both males and females, government expenditure on primary schools is biased towards the poorer households. But while government expenditure is more biased towards the poor in the rural areas, the opposite is true in the urban areas: only 13 percent of the benefits in urban areas went to households in the poorest quintile, while 26 percent accrued to households in the richest quintile.

10. The results also show that public expenditure on primary education appears to be pro-poor in all the rural areas of the three administrative regions of the country, although the bias is less pronounced in the central region. 33 percent and 41 percent of the benefits accrued to households the lowest quintile in the Northern and Southern regions, respectively, compared to the Central region, where only 22 percent of the benefits accrued to households in the lowest quintile.

Table 10.4: Percentage share of public expenditure on primary education by quintile

	Poorest 20%	2 nd Quintile	3 rd Quintile	4 th Quintile	Richest 20%
Total	26	25	21	17	10
By Gender					
Male	26	25	22	18	11
Female	27	26	21	17	10
Urban vs Rural					
Urban	13	16	19	26	26
Rural	28	26	22	16	8
By Region (Rural)					
Rural North	33	28	19	14	7
Rural Centre	22	27	23	19	10
Rural South	41	27	18	9	4

Source: National Statistical Office, IHS2

11. It can be argued that the distribution of expenditures in primary education is not- pro-poor, however. In fact, it is important to account for the fact that poor households are much larger than rich households and have twice the number of children. As a result, children from poor households on average benefit less than richer children. As already discussed in Chapter Two, it is important to note that about 25 percent of children from poor households are not enrolled in school, compared to only 16 percent in non-poor households. In fact, as many as 40 percent of children from the poorest 20 percent of households are not enrolled in primary school. In other words, primary education in Malawi is not yet universal. Hence public spending on primary education is benefits poor children relatively less, since many do not even start primary school. As discussed in Chapter Two, there are several reasons why children from poorer households do not enroll in primary school. Lack of money for fees and uniform is still the most predominant reason (about 50 percent) given by children who are out of school.

Access to Secondary Education

12. As seen in Table 10.5, access to secondary education is very limited. Only 10 percent of the communities report having a government secondary school within 2 kms of their communities, and 30 percent report having a Community Day Secondary School (CDSS) within

2 kms.¹⁷⁸ Most communities report having the nearest secondary school more than 2 kms from the community. Access to secondary schools is substantially better in urban areas, and is much worse for poor households. In line with these numbers, the number of students going to secondary school as reported by community leaders is low. Overall, the number of students reported to be in secondary school is about half the number attending primary school.

13. The average ratio of students to teacher does not vary substantially across regions (Table 10.6). Government secondary schools have consistently better ratios than CDSS, but the difference is only about 10 percent. Secondary schools in poor communities consistently have worse ratios. Unfortunately, we have no information on the quality of the teachers. Anecdotal evidence suggests that the quality of teachers in CDSS is generally lower, although efforts are underway to certify all secondary school teachers.

Table 10.5: Distance to the Nearest Secondary School (percent)

	Within the community		Within 2 km of the community		More than 2 km from the community	
	Government	Community Day	Government	Community Day	Government	Community Day
Malawi	2.5	10.6	7.5	19.5	90.1	69.7
Non-Poor	2.9	9.5	10.8	24.4	86.3	66.1
Poor	2.0	12.1	3.5	13.6	94.6	74.3
Urban	1.4	18.1	22.2	38.9	76.4	43.1
Rural Overall	2.6	9.6	5.3	16.7	92.1	73.8
North Region	2.8	22.2	4.2	15.3	93.1	43.1
Central Region	3.1	6.8	3.7	15.6	93.2	77.6
South Region	2.2	7.9	7.0	18.0	90.8	74.7

Source: National Statistical Office, IHS2 (Community Survey)

Table 10.6: Number of Teachers and Students in Secondary Schools (average)

	Government Secondary Schools			Community Day Secondary Schools		
	Average number of teachers per school	Average number of students per school	Average pupil/teacher ratio ¹	Average number of teachers per school	Average number of students per school	Average pupil/teacher ratio ¹
Malawi	18.3	513	28	9.2	278	30
Non-Poor	20.9	569	27	10	274	27
Poor	15.2	446	29	8.2	282	34
Urban	30.6	868	28	14.2	298	21
Rural Overall	16.5	460	28	8.4	275	33
North Region	13.1	375	29	6.3	168	27
Central Region	19.7	484	25	9.1	279	31
South Region	14.9	458	31	8.6	302	35

Source: National Statistical Office, IHS2 (Community Survey)

¹⁷⁸ Secondary education in Malawi has a dual system, comprising of conventional secondary schools and community day secondary schools. The main difference is that conventional secondary schools are the traditional secondary schools to which the best students are selected. Some of these have boarding facilities but run by communities. On the other hand, CDSSs do not have any boarding facilities and cater for pupils in the community who have not been able to make it to conventional secondary schools. Conventional secondary schools are better endowed in terms of resources than CDSSs.

Table 10.7: Proportion of students enrolled in government secondary schools by quintile

	Poorest 20%	2 nd Quintile	3 rd Quintile	4 th Quintile	Richest 20%
Total	13	16	20	24	26
By Gender					
Male	14	19	21	22	24
Female	11	11	19	28	30
Urban vs Rural					
Urban	3	10	13	27	46
Rural	15	18	22	24	21
By Region (rural)					
Rural North	27	31	14	17	11
Rural Centre	7	12	25	30	26
Rural South	21	20	22	18	18

Source: National Statistical Office, IHS2

14. Patterns in participation rates in government secondary school are presented in Table 10.7. Unlike primary education, participation in secondary education is clearly biased towards richer than poorer households. In total, only 13 percent of pupils enrolled in secondary school were from households in the poorest quintile. On the other hand, 26 percent were from households in the top income quintile.¹⁷⁹ This pattern holds even when the analysis is disaggregated by gender and by geographical region. However, it is worth noting that the biases towards the richer households are more pronounced in the case of females than males. In terms of geographical location, the biases towards the rich are more pronounced in urban areas. Across administrative regions, the picture is mixed. Participation is biased towards the poor in rural North, and fairly equitable in rural South, but biased towards the rich in rural Center.

15. When utilization of secondary education is disaggregated by type of secondary school, the results presented in Table 10.8 show that although enrollment in both types is biased towards the rich, these biases are even more pronounced in conventional secondary schools than in community day secondary schools (CDSSs). In other words, CDSSs are relatively more pro-poor than conventional secondary schools. When disaggregated by gender and geographical location, the results still show that in the case of both conventional as well as CDSSs, the biases towards the richer households are more pronounced in the case of females than males, in urban areas more than in rural areas. Across the rural areas of the three administrative regions, conventional secondary schools are still clearly biased towards the rich in the centre but seem less so in the North and South. CDSSs are however clearly biased towards the poor in the North and South, but towards the rich in the Centre. However, in all these cases, the message remains the same: CDSSs are relatively more pro-poor than conventional secondary schools. For example, in total, only 7 percent of students from households in the first quintile were enrolled in conventional secondary schools, while 15 percent were enrolled in CDSSs. Conversely, the enrolment rate in conventional secondary schools for the top quintile was 42 percent, while in CDSSs it was only 19 percent.

¹⁷⁹ The difference would be even greater if we consider the fact that poor households are relatively much larger and have twice the number of children.

Table 10.8: Proportion of students enrolled in government secondary schools by type of secondary school and by quintile (percent)

	Poorest 20%		2 nd Quintile		3 rd Quintile		4 th Quintile		Richest 20%		Total	
	CS	CD	CS	CD	CS	CD	CS	CD	CS	CD	CS	CD
Total	7	15	12	18	16	23	22	25	42	19	0.5	1
By Gender												
Male	8	16	17	21	17	24	20	21	37	19	0.6	1
Female	6	13	7	13	14	23	25	31	48	21	0.4	0.8
Urban vs Rural												
Urban	1	5	8	13	8	19	20	33	63	29	2	2
Rural Overall	11	17	15	19	20	24	24	23	31	18	0.4	1
By Region												
Rural North	20	30	30	30	5	15	7	19	38	6	0.2	1
Rural Centre	3	9	9	12	21	27	34	29	34	23	0.4	1
Rural South	18	21	19	23	22	24	15	18	26	15	0.4	1

Note: Regional data is not disaggregated by urban-rural (see footnote 174).

Source: National Statistical Office, IHS2

16. As the name suggests, community day secondary schools do not have boarding facilities. Some conventional secondary schools do have boarding facilities, however, and there has been a concern that boarding schools disproportionately benefit the rich, because the poor cannot afford the extra boarding fee. The analysis therefore looks further into how enrollment in government boarding secondary schools varied by income quintiles. The results confirm the anecdotal assertion that boarding schools mostly benefit the rich. As can be seen in Table 10.9, of all the students enrolled in boarding schools, only 9 percent came from households in the poorest quintile, while 39 percent came from households in the richest quintile. The results further indicate that these biases towards the rich are more pronounced in the case of females than males, in the urban areas more than in the rural areas. However, across the rural areas of the three administrative regions, there are clear biases towards the rich only in the Central region but not so much in the North and South. Of all the students enrolled in government secondary schools, only 0.4 percent were actually in boarding, however. In other words, 99.6 percent were day scholars.

Table 10.9: Proportion of students enrolled in boarding government secondary schools, by quintile

	Poorest 20%	2 nd Quintile	3 rd Quintile	4 th Quintile	Richest 20%	Total
	Total	9	8	20	23	39	0.4
By Gender						
Male	11	11	24	21	34	0.5
Female	6	5	16	27	46	0.3
Urban vs Rural						
Urban	0	4	0	21	75	0.5
Rural	11	9	24	24	33	0.4
By Region (Rural)						
Rural North	22	22	12	6	37	0.2
Rural Centre	4	5	27	29	34	0.6
Rural South	27	17	17	10	29	0.2

Source: National Statistical Office, IHS2

Benefit Incidence of Public Spending in Secondary Education

17. Patterns in benefit incidence of public expenditure on secondary education are shown in Table 10.10. Unlike primary education, the results show that public expenditure in secondary education is biased towards richer than poorer households. In total, only 11 percent of the benefits in secondary school accrued to households in the poorest quintile. On the other hand, 27 percent accrued to households in the top income quintile. This pattern holds even when the analysis is disaggregated by gender and by geographical region. However, it is worth noting that the biases towards the richer households are more pronounced in the case of females than males. In terms of geographical location, the biases towards the rich are more pronounced in urban areas than in rural areas and more in the central region than in the north and south.

Table 10.10: Percentage share of public expenditure on secondary education by quintile

	Poorest 20%	2 nd Quintile	3 rd Quintile	4 th Quintile	Richest 20%
Total	11	17	20	25	27
By Gender					
Male	13	20	21	24	23
Female	8	13	18	27	33
Urban vs Rural					
Urban	3	8	10	28	51
Rural	13	16	19	26	26
By Region					
North	17	29	15	23	15
Centre	5	11	22	30	32
South	15	19	19	21	26

Note: Regional data is not disaggregated by urban-rural (see footnote 1).

Source: National Statistical Office, IHS2

Access to Tertiary Education

18. Enrollment in tertiary education is even more biased towards the rich than the poor. As can be seen from Table 10.11, in total, of all the students that were enrolled in tertiary education, not one was from the poorest quintile. However, it must be said that these results need to be treated with great caution as they are based on a sample of only 35 observations.

Table 10.11: Proportion of students enrolled in tertiary education institutions by quintile

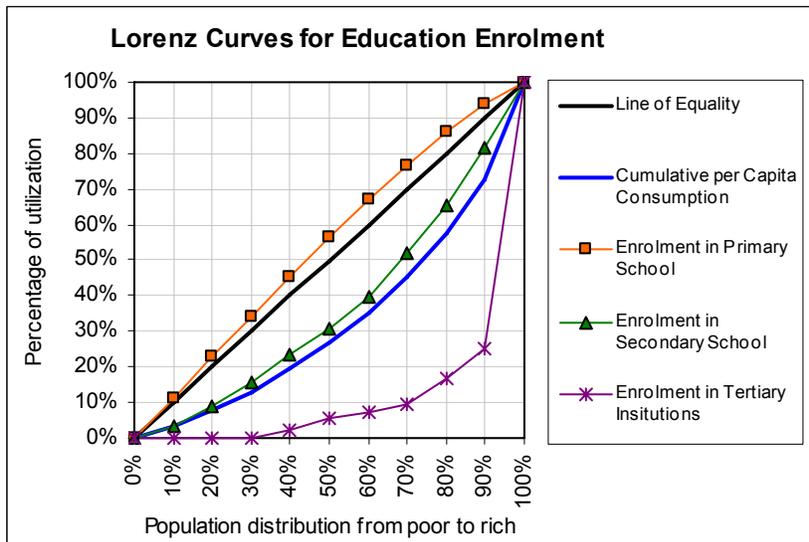
	Poorest 20%	2 nd Quintile	3 rd Quintile	4 th Quintile	Richest 20%	Total
Total	0	6	4	10	81	0.1
By Gender						
Male	0	8	5	10	76	0.1
Female	0	0	0	9	91	0.04
Urban vs Rural						
Urban	0	0	3	2	95	0.3
Rural	0	10	4	16	69	0.04
By Region (Rural)						
Rural North	0	47	0	0	53	0.03
Rural Centre	0	11	0	21	67	0.1
Rural South	0	0	12	13	75	0.03

Source: National Statistical Office, IHS2

Summary of Access to Education, and Benefit Incidence of Public Spending in Education

19. In sum, we find that enrolment in primary education is pro-poor, while for secondary and tertiary education, there is a bias toward the non-poor. The extent of inequality in access to education, and public expenditure benefits can be compared to the level of inequality of income distribution that was plotted in Chapter 1 as the Lorenz Curve (Figure 10.1). Confirming our findings above, the graph shows that only primary education is pro-poor to the extent that it disproportionately benefits those in poorer income brackets (illustrated by the fact that enrollment in primary schools lies above the line of perfect equality). Compared to income distribution, however, we find that enrollment for both primary and secondary education is more equitable than income, since the concentration curves for utilization of primary education and secondary education are both above the Lorenz curve. In contrast, enrolment in tertiary institutions is even less equitable than income, by a considerable margin.

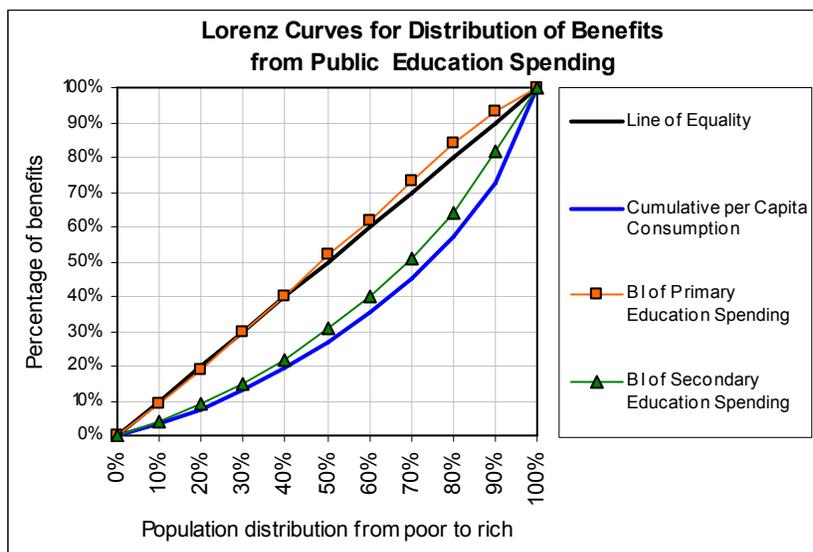
Figure 10.1: Concentration curves for enrolment in primary, secondary and tertiary education, compared to Income distribution



Source: National Statistical Office, IHS2

20. Plotting a similar graph for the benefit incidence of public expenditure on education, we find the concentration curve for primary education spending is just above the line of perfect equality, while that of secondary education spending is below it (Figure 10.2). This confirms the findings presented earlier that primary education is pro-poor, while secondary and tertiary education is biased towards the non-poor. Once again, compared to the Lorenz curve, the expenditure on primary and secondary education is relatively more equitable than income, since the benefit incidence for public spending on primary and secondary education are both above the Lorenz curve. In other words, the benefits of public expenditure on primary education and secondary education are relatively more biased towards the poor than the distribution of income. The analysis was not extended to tertiary education.

Figure 10.2: Concentration curves for primary and secondary education expenditure



Source: National Statistical Office, IHS2

21. While expenditure data to distinguish between CDSS and boarding schools is not available, it is reasonable to expect that the inequitable pattern above would be further exacerbated if we could account for the higher costs of running boarding schools as compared to CDSS. In fact, as discussed earlier, the boarding schools are mainly attended by students from the richest households.

22. Although benefit incidence analysis does indicate how resources spent in primary, secondary, as well as tertiary education are distributed across income groups, it masks the true extent of inequalities that exist between the poor and the non-poor in accessing these services in general. For example, the benefit incidence analysis above shows that public expenditure in primary education is benefiting the poor more than the non-poor. It is apparent from the analysis that this is mainly because out of all the pupils that are enrolled in primary education, proportionately more are from the lower deciles. However, it was also found in Chapter 2 that poor households have relatively more children than non-poor households and that gross as well as net enrollment rates for the poor households are relatively lower than those of the non-poor. This means that compared to non-poor households, there are more children from poor households that are not benefiting from public expenditure in primary education simply because they are not enrolled. Therefore, there is need to go beyond traditional benefit incidence analysis in order to understand the extent of inequalities in accessing public services

ACCESS TO HEALTH SERVICES AND BENEFIT INCIDENCE ANALYSIS OF PUBLIC SPENDING IN THE HEALTH SECTOR

Access to Health Services

23. The community questionnaire provides information on the presence of health clinics, nurses/midwives and doctors in the community. About 56 percent of the communities reported that the nearest health clinic was further than 2 km from the community (Table 10.12). More

urban communities report health clinics within their community or within 2 km of their community (58 percent) than rural communities (42 percent). Among the rural communities, there is not much difference in the presence of a health clinic within 2 km of the community between the North Region, Central Region and South Region. Communities report that there is a nurse or midwife working permanently for 88 percent of the health clinics. This percentage remains roughly the same regardless of distance from the community, and regardless of location.

Table 10.12: Distance to Nearest Health Clinic and presence of Nurse/Midwife (percent)

	Within the community	Within 2 km of the community	More than 2 km from the community	Presence of Nurse/Midwife at Nearest Clinic
Malawi	31.9	11.7	55.9	87.6
Non-Poor	35.8	13.1	50.8	87.0
Poor	27.2	10.1	61.9	88.3
Urban	36.1	22.2	41.7	86.1
Rural Overall	31.3	10.2	57.9	87.8
North Region	34.7	9.7	54.2	88.9
Central Region	30.2	7.8	61.5	85.9
South Region	31.1	12.3	56.1	89.0

Source: National Statistical Office, IHS2 Community Survey

Table 10.13. Distance to Nearest Health Clinic with Medical Doctor (percent)

	Within the community	Within 2 km of the community	More than 2 km from the community
Malawi	6.7	8.3	84.9
Non-Poor	8.8	11.4	79.8
Poor	4.3	4.7	91.1
Urban	9.7	23.6	66.7
Rural Overall	6.3	6.1	87.6
North Region	9.7	5.6	84.7
Central Region	8.9	6.3	84.9
South Region	3.1	6.1	90.8

Source: National Statistical Office, IHS2 Community Survey

24. Access to health facilities with doctors, is quite limited, however, for most Malawians (Table 10.13). On average, 85 percent of the communities indicate that the closest health clinic with a medical doctor is further than 2 kms away. Access to health facilities with doctors is worse in rural areas (88 percent more than 2 kms away) than urban areas (67 percent more than 2 kms away), and is especially bad in the South Region (91 percent more than 2 kms away). Also, poor communities have substantially worse access than non-poor communities (91 percent versus 80 percent, respectively, have to travel more than 2 kms).

25. From the IHS-2 questionnaire, it is possible to identify individuals who had sought treatment at a government health facility when they fell ill and also to identify those that were actually hospitalized. However, it is not possible to identify beneficiaries of preventive health services. Nationally, utilization of curative public health services at government health facilities is slightly biased towards the rich: of the people who sought treatment at a government health facility, 17 percent were from households in the poorest quintile, while 20 percent were from households in the richest quintile (Table 10.14).

Table 10.14: Proportion of people who went to a government health facility when sick

	Poorest 20%	2 nd Quintile	3 rd Quintile	4 th Quintile	Richest 20%	Total
Total	17	21	21	22	20	8
By Gender						
Male	16	20	21	22	20	8
Female	17	23	20	21	19	8
Urban vs Rural						
Urban	5	11	16	26	42	7
Rural	18	22	21	21	17	8
By Region						
(Rural)						
Rural North	16	18	23	23	20	8
Rural Centre	12	21	21	24	22	8
Rural South	23	25	21	18	13	9

Note: Regional data is not disaggregated by urban-rural (see footnote 1).

Source: National Statistical Office, IHS2

26. Broken down by administrative regions (rural only), we find that access in the southern region is pro-poor, with 23 percent of those that accessed curative health facilities from households in the poorest quintile, compared to 13 percent from the richest quintile. There appear to be no significant differences in the pattern of utilization between males and females. However, in urban areas, utilization was considerably more biased towards the rich than the poor, with only 5 percent of those that accessed curative health facilities coming from households in the poorest quintile but 42 percent from the richest quintile.

27. The results also show that utilization of in-patient services is more biased towards the rich than the poor. As can be seen from Table 10.15, overall, only 15 percent of in-patients were from the poorest quintile while 25 percent were from the richest quintile. The biases are, however, less pronounced in the case of females, and in the southern region, but are much more pronounced in urban areas.

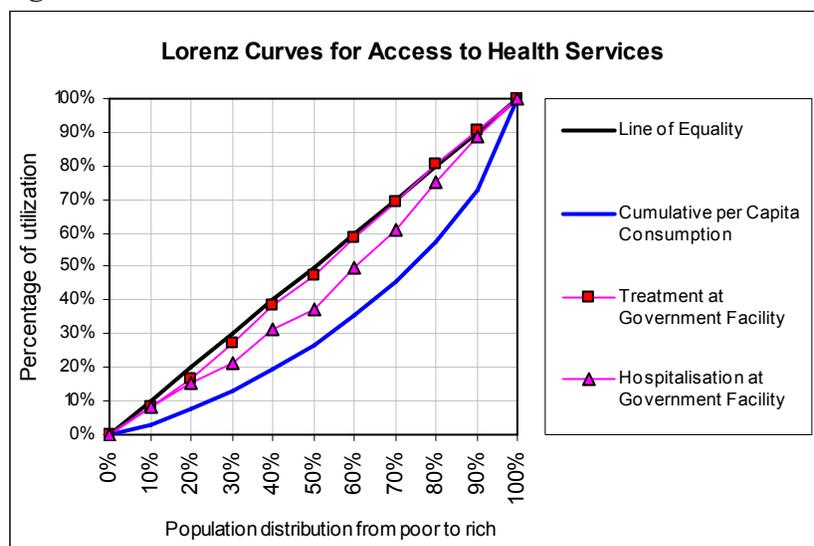
Table 10.15: Proportion of people hospitalized at a government health facility when sick

	Poorest 20%	2 nd Quintile	3 rd Quintile	4 th Quintile	Richest 20%
Total	15	16	18	26	25
By Gender					
Male	13	15	18	29	25
Female	17	17	18	23	24
Urban vs Rural					
Urban	5	5	16	26	48
Rural	16	18	18	26	22
By Region (Rural)					
Rural North	10	18	18	25	29
Rural Centre	15	16	15	29	26
Rural South	19	19	22	23	16

Note: Regional data is not disaggregated by urban-rural (see footnote 1).

Source: National Statistical Office, IHS2

Figure 10.3: Concentration curves for access to health services



Source: National Statistical Office, IHS2

28. As for education, we can compare the distribution of treatment at a government facility and hospitalization with the distribution of income, as depicted by a Lorenz curve (Figure 10.3). We find that curative treatment at a government facility is relatively equitable, hovering around the line of perfect equality.¹⁸⁰ On the other hand, as presented earlier, utilization of hospitalization services are below the equality line – an illustration of the fact that hospitalization is much more biased towards the rich than just access to treatment. Both treatment at government facilities and hospitalization rates are relatively more equitable than income, however, since the concentration curves are both above the Lorenz curve for income.

Benefit Incidence Analysis of Public Spending in the Health Sector

29. Just like access, monetary benefits from government curative health services are biased towards the rich, although not in a very pronounced way. As can be seen in Table 10.16, the pattern of benefit incidence follows that of participation discussed earlier. The results show that nationally, the poorest 20 percent received only 15 percent of the government subsidy that went to curative health services. On the other hand, the richest 20 percent received 21 percent of the subsidy.

30. Biases towards the rich in the distribution of the government subsidy on curative public health services are, however, more pronounced in the urban areas and in the central region, while the distribution in the southern region is once again more pro-poor. In the South, 22 percent of the subsidy went to the poorest quintile, only 13 percent went to the richest quintile. The table shows no significant differences in the pattern of subsidy distribution between males and

¹⁸⁰ This statement implicitly assumes that the need for health care is uniformly distributed across all wealth quintiles. In fact we do not have information on who needs health care. One can envisage that the poor may suffer a disproportional higher burden of several diseases (e.g. diarrhea), and should therefore be benefiting relatively more according to their need. In such a case a proportional distribution of health benefits should not be regarded as equitable.

females, both of which show slight biases towards the rich as was the case in the overall sample. However, it can be seen that in urban areas, distribution of the health subsidy was more biased towards the rich than the poor, with only 6 percent of the subsidy going to the poorest quintile but 42 percent from the richest quintile.

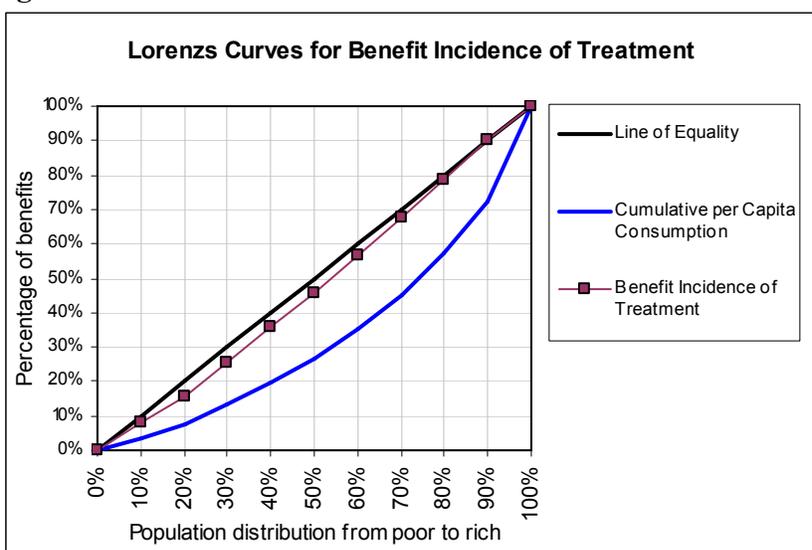
Table 10.16: Percentage share of public expenditure in curative health services, by quintile

	Poorest 20%	2 nd Quintile	3 rd Quintile	4 th Quintile	Richest 20%
Total	15	21	21	22	21
By Gender					
Male	15	21	21	22	21
Female	15	21	21	23	20
Urban vs Rural					
Urban	6	11	15	26	42
Rural	17	22	21	22	18
By Region (Rural)					
Rural North	15	20	22	22	20
Rural Centre	11	20	21	25	23
Rural South	22	25	21	19	13

Source: National Statistical Office, IHS2

31. Actual government subsidy for treatment in health facilities¹⁸¹ is much more equitable than the general income distribution (Figure 10.4). The concentration curve for benefit incidence of treatment at a government facility is very slightly biased towards the rich, falling just below the line of equality, and well above the Lorenz curve for income.

Figure 10.4: Concentration curves for benefit incidence of treatment



Source: National Statistical Office, IHS2

¹⁸¹ Unfortunately, expenditure data does not allow a differentiation on the basis of type of treatment; hence the analysis includes both the benefits of a visit or day treatment, with the benefits of those who are hospitalized.

POLICY IMPLICATIONS

32. The findings of the analysis show that poor households appear to benefit from expenditure in primary education more than the non-poor households. When taking into account the large number of children who are not enrolled in primary education, however, it becomes clear that children from poor households on average benefit less than children from richer households. This bias is even more pronounced with regards to secondary and tertiary education.

33. Given the high returns to education, there is a strong rationale to redress these inequities. The Public Expenditure Review (PER) carried out by the government (jointly with the World Bank) in 2006/07, presents a comprehensive analysis of the efficiency, quality, and access to education in Malawi, and highlights a series of measures to improve efficiency and access to education services. The reader is referred to the PER for full details. Here we only provide a brief summary of the key recommendations to address the challenges facing the education sector:

- Since 70 percent of dropouts occur in the first four standards, it is crucial to increase attention to quality of education at lower levels. This can be achieved by increasing the relative allocation to lower primary education (Standard 1-4) through internal reallocation of, particularly, classrooms and teachers.
- Improving the Pupil per Qualified Teacher Ratio is critical to raise both quality and efficiency of education; this can be achieved by increasing the output of teachers, rationalizing the allocation of teachers across sub-sectors, fighting absenteeism, and intensifying the fight against HIV/AIDS. The alarmingly high rate of teacher absenteeism needs to be addressed through increased monitoring, and by raising the quality of school management, and also possibly by introducing legislation to give communities the option of managing their local school and the right to hire/fire teachers (i.e. the State would continue paying for a certain number of teachers depending on school size, but cannot influence the choice of teacher).
- In addition, it is critical that MOE prioritize funding implementation of the Ministry's HIV/AIDS policy, to help curb the spread of HIV/AIDS and to mitigate its impact on the education sector.
- The geographical distribution of funding must follow an equitable financing formula, and not perpetuate past inequities. The government education budget needs to be rebalanced between regions.
- In secondary education, the emphasis of reforms should be to reduce the gap in education quality offered at CDSSs versus CSSs. All resources, including qualified secondary teachers, should be allocated equitably between the different types of public secondary schools to level out quality.
- Government should not pay for boarding facilities. The boarding school system is inefficient (and inequitable—see below). Construction of boarding facilities should be limited to schools where boarding is necessary for girls (where alternative safe accommodation is not available). In any case, the government should refrain from subsidizing boarding services, which should be outsourced and paid for by students (see below about financial support to poor students).
- The efficiency of the education system could be also improved by reducing student repetition, for example through automatic promotion between certain grades (in as far as

improvements in the quality of education allows). The higher repetition and dropout rates for girls must also be addressed (see below).

- The financing of higher education needs urgent reform, to reduce government subsidies and considerably increase cost sharing with students who belong to the richest income quintiles. Possible measures include:
 - o The bursary scheme for secondary needs to be adequately targeted to reach pupils from the lower income quintiles, to increase their access to secondary.
 - o The intake of girls to government secondary schools should be increased to 50 percent, by increasing the number of places in boarding facilities reserved for girls, implementing the recently approved ‘pregnancy policy’, and increasing the number of female teachers.
 - o The loan collection system for tertiary education needs to be enforced, or scrapped, and the money targeted towards bursaries for the needy across the education sub-sectors

34. In health, it was found that government spending in the health services is distributed with considerable equity across socioeconomic groups. Nevertheless, whilst the benefits from the provision of government health centers were equitable, the poor receive a considerably lower share of the benefits from the subsidy for the provision of government hospitals. The benefit incidence was largely explained by differences in the utilization of health services and the lower reported incidence of illness amongst the poor, rather than the distribution of the health subsidy. This implies that if the Malawi Government wants to increase the share of the benefits reaching the poor, then a reallocation of the public curative health subsidy would not be sufficient. In initiating policy change, it would be important, therefore, to understand what factors affect the utilization of government health services, as well as individual decisions about health care. Any attempt to further increase the share of the benefits from public health spending reaching the poor should focus on improving health awareness and facilitating greater utilization of health services, particularly among the rural poor.

35. The 2006/07 Public Expenditure Review provides a detailed analysis of the efficiency, quality, and access to health services in Malawi, and the reader is referred to the PER for an in-depth analysis of the challenges facing the sector. Here we only provide a brief summary of the key measures proposed to improve health service delivery in Malawi:

- Additional action is required to increase the level of skilled staffs. Funding needs to be identified, and government should request more donors to support the emergency training and recruitment plans. In addition, there is a need to develop a system for tracking trainees and recruiting them at the completion of their training. In this context, formal bonding arrangements should be introduced as a requirement for those whose training has been paid (or subsidized) by the government.
- The potential for public-private partnerships should be better exploited, notably with CHAM, given the scarcity of human resources in government facilities.
- Community-based health services should be expanded and strengthened. In addition, the government should pursue expansion of community-based programs for essential health services.

- Reforms of the Central Medical Stores should be accelerated, and in parallel there is an urgent need to improve the procurement and delivery systems for essential drugs. Procurement and drug tracking systems should be rationalized to improve drug stream and realize the cost saving benefits of bulk procurement.
- Tertiary hospitals should be reformed to improve quality of care and cost recovery. The hospital autonomy bill should be enacted and its provisions implemented.
- Cost recovery at tertiary care facilities should be improved through design of a sliding scale fee structure that keeps up with current prices, but accounts for the variety of patients that tertiary hospitals have. A Poverty and Social Impact Analysis should be carried out to inform the new fee structure, to ensure continued access to the poorest.

CHAPTER 11: MONITORING AND EVALUATION SYSTEMS AND INSTITUTIONS

INTRODUCTION

1. Monitoring and evaluation (M&E) systems are critical to measuring the welfare of the people and economic development of the country. There is an obvious need for a system that can produce information on the nature, distribution, and determinants of poverty, and to track poverty trends over time as a basis for decision-making and policy formulation. Systematic M&E provides managers and implementers of project and programs with regular information to track progress towards development objectives, and to resolve implementation problems, and also to inform decisions about future interventions based on solid evidence of what works and does not work. Sound monitoring systems can also help improve governance of public and aid resources by providing transparency, accountability, and evidence of program or project impact to Parliament, civil society and external partners.

2. A national system for monitoring poverty typically has three main elements, and an overarching institutional framework to bring the different parts together: (1) a national survey program for measuring welfare and living standards, and for tracking trends over time; (2) a system and review mechanism for monitoring the implementation and evaluating the results of government's poverty reduction strategy; and (3) a system for tracking budgeting and expenditures.¹⁸² These elements are inter-related and inter-dependent. Implementation and expenditure monitoring shows whether the government's strategy is being translated into action, for both management and accountability purposes in the short- to medium-term. Welfare and living standards measurement shows the long-term effects of government's policies and programs.

3. This chapter provides an introduction to the purpose of monitoring and evaluation systems along with the political and institutional framework (Section 1) in which these systems operate in Malawi. The main focus of the chapter relates to the three components of a national poverty monitoring system. Section 2 discusses the national survey program for monitoring welfare and living standards. Section 3 discusses the implementation and monitoring of the Malawi Poverty Reduction Strategy (MPRS), and Section 4 discusses the budget and expenditure monitoring. Finally, a number of recommendations are provided.

THE POLITICAL AND INSTITUTIONAL FRAMEWORK FOR M&E

4. The National Statistical Office has been responsible for the collection and dissemination of official socio-economic statistics in Malawi since 1967, and continues to play a key role in monitoring poverty, vulnerability and inequality. Even prior to the adoption of the Millennium Development Goals (MDGs) in 2000, and the MPRS in 2002, the system for monitoring welfare indicators was already fairly well established (see Box 11.1). However, the MDGs and the MPRS introduced broader monitoring and evaluation requirements, demanding new institutional arrangements, as well as reliable administrative records and expenditure data.

¹⁸² Draws on text and ideas from Cox, Marcus, and Nigel Thornton (Agulhas Development Consultants Ltd.), PRS Monitoring Systems: An Analysis of Institutional Arrangements: Synthesis Report, June 2005.

5. Under the MPRS, the Ministry of Finance is responsible for the budget, and monitoring inputs and outputs, and the Ministry of Economic Planning and Development (MEPD) for assessing outcomes and impacts. Sector ministries are responsible for preparing budget proposals, implementing the approved budget in accordance with government priorities, and reporting progress annually to MEPD. Responsibility for implementing activities under the MPRS also lies primarily with the sector ministries. However, the M&E functions in the line

BOX 11.1: A BRIEF HISTORY OF POVERTY MONITORING IN MALAWI

- 1994:** The newly-elected government declared poverty reduction to be its top priority and initiated the *Poverty Alleviation Program*. This created a new imperative to understand the magnitude and multiple dimensions of poverty in the country.
- 1995:** The government prepared a *Profile of Human Resources and Poverty*. This profile was constructed using data from three household surveys conducted in the early 1990s and constituted the first attempt to analyze poverty in Malawi using nationally representative data on household expenditures and income. The data was used to assess the prevalence, depth and severity of poverty across urban and rural areas, and to show the extent of income inequality. The findings were used to develop priorities for a poverty reduction strategy in Malawi. The study highlighted weaknesses in the statistical system, noting that “the data do not lend themselves to trend analysis or long-term monitoring.”
- 1996:** To address identified statistical system weaknesses, the government initiated a *Poverty Monitoring System* to evaluate program effects and track the progress of key indicators of poverty over time. Data collectors, researchers, and policy-makers inside and outside government reached a consensus on key poverty indicators.
- 1998:** The National Statistics Office initiated the *First Integrated Household Survey* (IHS1). The IHS1 survey covered 12,960 households in all districts, and was the largest household survey on living conditions ever conducted in Malawi. The IHS1 survey was funded primarily from government sources. There were some concerns regarding the quality of the IHS1 data, e.g. a large share of the information collected was not usable because of problems in the use of diaries to record expenditure and consumption. Nevertheless, the data was extensively analyzed by NSO and the National Economic Council (the predecessor of MEPD) to produce an absolute poverty line—and for the first time, a relative poverty line—a poverty profile, poverty maps and a number of poverty briefs. IHS1 was complemented by a *Qualitative Impact Monitoring Survey* (QUIM), undertaken by the National Economic Council (NEC), and was followed by a *Panel Survey*. [See: www.nso.malawi.net]
- 2000:** Malawi subscribed to the *Millennium Development Goals* (MDGs) of eradicating extreme poverty and hunger, achieving universal primary education, promoting gender equality, reducing infant mortality, improving maternal health, combating HIV/AIDS, malaria and other diseases, ensuring environmental sustainability, and developing a global partnership for development, by 2015. These goals were commonly accepted by the international community as a framework for measuring development progress.
- 2002:** Analyses based on IHS1 and QUIM were used in developing the *Malawi Poverty Reduction Strategy* (MPRS), which was adopted in April 2002, for a period of three years, up to June 2005. The MPRS was largely in line with the MDG goals. The MPRS expanded the national poverty monitoring framework to include monitoring and evaluation (M&E) of inputs (financial, labor and capital), outputs (quantity and quality of services provided), outcomes (effects of services provided) and impacts (the effects on welfare indicators). The MPRS also envisaged an annual assessment of implementation progress, by both Government and non-state actors. The National Economic Council was mandated to coordinate all M&E activities related to the MPRS, including the annual reviews.

ministries (including monitoring their own programs for management purposes) are constrained from very limited human capacity. However, this responsibility is expected to shift increasingly to district and community levels as government gradually devolves resources and oversight. Local government is responsible for coordinating decentralized MPRS monitoring. However, in practice MEPD is likely to continue to play a key role in coordinating monitoring and evaluation at district level.

6. A September 2004 review commissioned by the World Bank reported that “the MPRS is not accorded the highest priority, and viewed in most circles as a donor driven document.”¹⁸³ Monitoring of the MPRS was correspondingly accorded low priority. The study also found that MEPD was “not proactive” in its role of coordinating M&E activities related to MPRS monitoring, and lacked the “leadership role and political power to mobilize other sectoral ministries.”

7. The political environment for monitoring and evaluation has improved in the past few years. In 2006 the government finalized a strengthened (and “home-grown”) Malawi Growth and Development Strategy (MGDS), in consultation with all stakeholder groups. The new MGDS sets out an ambitious agenda for the next five years. The strategy has clearly benefited from extensive consultation and an impressive degree of technical input. The sharper results-focus of its outcomes is in marked contrast to the MPRS. Malawi’s new top leadership recognize the need to establish clear criteria and benchmarks to monitor implementation of the strategy, to measure the government’s performance in delivering on results, and to strengthen the role of civil society in holding government accountable. Several donors are supporting the government to enhance strategic planning, policy formulation, public expenditure management, implementation capacity, and monitoring and evaluation systems.

8. The government is taking several steps to address weaknesses in its monitoring capacity and systems. While the institutional framework and monitoring systems are still weak, MEPD has started to set up a robust monitoring and evaluation system. MEPD has become more proactive in its advocacy, coordination and advisory role, and has led the development of a comprehensive M&E master plan to assess, monitor, and evaluate the MPRS. A Road Map has been prepared to (1) develop M&E capacity at the sector, district and community level; (2) advocate for national M&E programs; and (3) undertake reviews and conduct impact assessments. MEPD has also resuscitated the Public Sector Investment Program which provides a framework for planning investment projects in light of the government’s strategy.

9. However, there are some issues that require additional attention with regards to the political and institutional framework for M&E. Firstly, MEPD’s M&E Division is currently very understaffed: several vacant positions need to be filled to ensure the unit can fulfill its role effectively. Like other government agencies, MEPD faces a challenge in attracting and retaining qualified, experienced staff, due to poor and deteriorating conditions of service for mid-level managers in government. Resolving this issue is key to both delivering results and measuring them.

¹⁸³ Chirwa, Ephraim, Poverty Monitoring Systems in Malawi: An Analysis of Institutional Arrangements, (report submitted to the World Bank), September 2004.

10. Secondly, the connection between the budget planning and monitoring function of the Ministry of Finance Budget Division and the outcome monitoring function of MEPD are not well integrated. There appears to be some confusion regarding the respective roles and responsibilities of the two agencies, particularly concerning consultations with other stakeholders. In addition a new Policy Research Monitoring and Evaluation Division was set up in the Office of the President and Cabinet (OPC) in 2005. This unit is responsible for “research, monitoring and evaluation of all government policies to ensure consistency and coherence.”¹⁸⁴ The relationship between OPC and the MEPD M&E Division also needs to be better clarified.

11. Thirdly, an appropriate combination of incentives for individual and organizational contributions to results and sanctions for poor performance need to be put in place, which will motivate government officials to focus on “doing” whatever needs to be done to improve service delivery and outcomes for their clients.¹⁸⁵

12. Finally, the various coordination/consultation mechanisms related to the national statistical system and MPRS monitoring which exist on paper are unclear, and their respective purposes and operations (such as who convenes them, who is invited, and how often) need to be rationalized and clarified.

The Role of Civil Society in Holding Government Accountable

13. Various stakeholders and institutions contribute to hold the government of Malawi accountable to its citizens, including several civil society umbrella groups (notably the Malawi Economic Justice Network, MEJN, which is a coalition of civil society organizations focusing on economic issues), community-level monitoring, Parliament, private sector organizations, and the media.

14. Civil society is formally and informally integrated into the MPRS monitoring process, and is represented in annual MPRS progress reviews by the MEJN and other CSO umbrella groups. These organizations have been undertaking well-executed and well-regarded budget monitoring through annual Public Service Delivery Surveys, covering agriculture, public safety and security, health, provision of safe water, primary education and road infrastructure. CSOs also play an important role in raising public understanding of national strategies and the workings of government, e.g. they broadly disseminated information on the MPRS, and translate budget documents into simplified formats and language accessible to the average citizen. Despite their officially-recognized role, some civil society representatives report having difficulty in accessing key government documents in a timely manner.

15. The Malawi Social Action Fund (MASAF 3) project offers an interesting example of monitoring at community level which is linked to the MDGs and the MPRS (see Box 11.2).

¹⁸⁴ Source: TOR provided by OPC to World Bank, June 2005.

¹⁸⁵ Examples are: introduction of service delivery reach and client satisfaction as measures of success and performance reward (at Ministry, district, facility level); release of funds based on implementation progress; enforcement of sanctions for malpractice or poor performance.

16. Parliament is increasingly holding the Executive accountable, and exercising its right of veto. Parliament takes an active role in public expenditure monitoring through the Parliamentary Public Accounts and Budget and Finance Committees. A recent study undertaken by the German Agency for Technical Cooperation (GTZ) cited Malawi's Parliamentary Budget and Finance Committee budget monitoring reports as a global good practice example.¹⁸⁶ All Parliamentarians have received training in "economic literacy" through a CIDA-supported program.

17. The private sector also monitors government's performance through the National Action Group, and business associations, which are becoming increasingly influential players in the political arena.

18. The media is not very effective in holding government accountable, partly because of the need to increase capacity through specialized training for journalist.

BOX 11.2: MALAWI SOCIAL ACTION FUND MONITORING & EVALUATION SYSTEM: LINKING GLOBAL, NATIONAL AND LOCAL DEVELOPMENT OBJECTIVES

The Malawi Social Action Fund (MASAF) is a community-driven development operation, which is designed to help Malawi meet the Millennium Development Goals (MDGs) and Poverty Reduction Strategy (MPRS) targets, through community empowerment and accountability. MASAF's M&E system, which uses MDG and MPRS indicators (and refers to the MPRS M&E Master Plan), is designed to (a) allow regular performance measurement of results and service quality; (b) gauge the project's contribution towards meeting the MDGs; and (c) focus attention on achievement of intended development outcomes.

The beneficiary communities themselves play an integral role in MASAF's M&E system. The beneficiary population is a primary source of data through community score cards, citizen report cards, and beneficiary assessments. Communities, CBOs, and NGOs collect data, which they provide to the Local Authority and the MASAF Zone Office, who in turn provide information to the central MASAF M&E Unit, which provides aggregated data to the MASAF Board and the Ministry of Economic Planning and Development (MEPD) for performance monitoring. Beneficiary communities are also recipients of M&E products (quarterly and annual reports and briefs) which are presented and discussed at community meetings.

Source: MASAF 3 M&E Plan (Draft, undated).

MALAWI'S NATIONAL SURVEY PROGRAM

19. The National Statistical Office (NSO) is a well-established, professional organization, with good leadership. It has participated in the International Monetary Fund (IMF) General Data Dissemination System since 2002. A 2005 IMF report recognized Malawi's strong commitment to adhere to internationally accepted good practices in terms of data coverage, timeliness, reliability, and dissemination to the public of socio-economic statistics.

¹⁸⁶ GTZ, Making Poverty Reduction Strategies Work – Good Practices, Issues and Stakeholders Views, May 2005.

20. In December 2003, PARIS21 undertook a country case study in Malawi as part of a broader study aimed at improving statistical support for monitoring development goals.¹⁸⁷ The PARIS21 review found that Malawi has an appropriate national survey program, including a population census every ten years, Integrated Household (living standards measurement) Surveys approximately every five years, a Demographic and Health Survey every four years, and a Welfare Monitoring Survey every year. The planned program is largely on track.¹⁸⁸ However, delays are often experienced due to lack of resources (see below).

21. The PARIS21 study found that the 1998 Census is substantially in accordance with standard international recommendations, and that the methodology of the IHS is consistent with the World Bank's Living Standards Measurement Survey.

22. The second national Integrated Household Survey (IHS-2) was carried out in 2004/05 and the quality of the data is very good by regional standards. Notably the survey represents a substantial improvement on the 1997/98 IHS-1, due to methodological improvements in the design of the questionnaire and the execution of the survey. UNFPA is currently working with the NSO on census mapping in preparation for the 2008 Census. An Agriculture survey was last done in 1992, and a new one is planned in 2006. The first exercise under the International Comparison Program (ICP)¹⁸⁹ is currently under way. The PARIS21 review also found that data availability from national data sources for monitoring the key MDG indicators between 2005 and 2015 “will be relatively good, provided that a core household survey program is maintained, and that they are processed in an efficient and timely manner.” The review also noted the importance of maintaining comparability of indicators, consistency of definitions, etc. across surveys.

BOX 11.3: KEY BENCHMARKS FOR ASSESSING THE NATIONAL SURVEY PROGRAM

1. Is there a Statistical Plan in place?
2. Is the sequencing of surveys appropriate?
3. Does the Plan meet the data needs of the PRSP and other national strategies?
4. Do the surveys meet international standards, such as the IMF's General Data Dissemination System (GDDS)?
5. To what extent has the Plan been implemented?
6. What are some of the key constraints?

23. Several of the MDG indicators are based on administrative data from key sector Ministries. In the short to medium term (5-10 years), administrative systems were not expected to provide reliable data without significant improvements, although major progress was already

¹⁸⁷ Source: PARIS21 (Partnerships In Statistics for the 21st Century), Improved Statistical Support for Monitoring Development Goals: Country Case Study Malawi, April 2004.

¹⁸⁸ The last Census was undertaken in 1998; the next is due in 2008. Nationally representative household surveys were undertaken in the early 1990s, but the data from these surveys was not suitable for long-term monitoring (see Box 1). The first Integrated Household Survey (IHS1) was conducted in 1997/98, and the second in 2004/05. Demographic and Health Surveys were conducted in 1992, 1996, 2000, and 2004. A Core Welfare Indicator Questionnaire (CWIQ) survey was conducted in 2002, and a Welfare Monitoring Survey (WMS), based on the CWIQ methodology, in 2005. The CWIQ/WMS are “light” and relatively inexpensive annual monitoring surveys, used to track trends between IHS and DHS surveys—particularly on indicators where annual changes are likely to be significant—and for which the data can be collected and preliminary results published within weeks of field-work completion.

¹⁸⁹ ICP is a new software Tool Pack developed by the World Bank to support national price collection efforts, standardization, validation, consistency, etc., in order to strengthen key areas of data collation at both national and international levels.

being made in the Health and Education Management Information Systems (HMIS and EMIS). Work is ongoing to improve the quality of data in these sectors. Administrative data systems are discussed in more detail in Section 3. Data from household surveys must be used in the absence of reliable administrative data, which makes it all the more important for new survey data to be available on a regular and predictable basis. Sources of data for monitoring MDGs are summarized in Annex 11A.

24. Data produced by Malawi's NSO is largely available to the public. NSO's Web site provides access to key poverty and other socio-economic data on Malawi, including the 2002 Atlas of Social Statistics (the most-often requested NSO publication), and the Malawi Social and Economic database (MASEDA), a user-friendly software application for storing and retrieving data on key indicators. However, access to the survey databases is not easily available, and request in writing need to be sent to the NSO. In general, survey data is underutilized, partly due to limited awareness and dissemination, but also due to limited analytical capacity.

25. Several donors (including DfID, NORAD and the World Bank) are currently supporting the NSO to strengthen statistical capacity. DfID has recently agreed to fund preparation of a new Statistics Law. NSO also plans to develop a new National Statistical Master Plan (SMP) when the current five-year plan comes to an end in 2006. The new plan will be aligned with the monitoring and evaluation needs of the new Malawi Growth and Development Strategy. This should enable the NSO to establish a regular survey program, and reduce the number of ad hoc surveys. The SMP should include strengthening analytical skills and use of data in policy-making.

26. The performance of the NSO, however, is hampered by lack of resources, including both human and financial resources.¹⁹⁰ The NSO suffers from a shortage of human resources and consequently has difficulty in fulfilling its role of assuring data collection quality standards and consistency of methodology and definitions among data producers. The NSO currently has a number of vacant positions which need to be filled. Like other government departments, NSO faces a challenge in attracting and retaining qualified, experienced staff, particularly those with IT skills.

27. The national survey program could not be implemented without external funding and technical assistance. The NSO receives from the government's budget only about one third of the funding needed to run the basic national statistics program, and is dependent on donors for the shortfall. Over-dependence on donors means that funding is unpredictable. In some instances the NSO lost control over its survey schedules and sometimes even survey coverage.¹⁹¹ Requests for ad hoc surveys, while bringing extra financial resources, also put additional

¹⁹⁰ IMF, Malawi: Report on Observance of Standards and Codes—Data Module, Response by the Authorities, and Detailed Assessment Using Data Quality Assessment Framework, February 2005. This report provides a very detailed assessment of the quality, integrity, methodological soundness, accuracy, reliability, serviceability and accessibility of financial and monetary statistics in Malawi. This report can be accessed on the Internet via IMF's Publications page at: <http://www.imf.org/external/pubind.htm>

¹⁹¹ For example, an integrated household survey (IHS) should be undertaken at least every five years. The first IHS was undertaken in 1997/98. Due to lack of funding, the second IHS was undertaken only in 2004/05, i.e. seven years later. This is outside recommended international norms, and compromises Malawi's ability to track poverty indicators regularly over time.

demands on NSO's capacity. Although, in the long term, the core national statistical program should be government-funded, in the short to medium-term it will most likely continue to be dependent on donor funding. Government and donor partners will need to ensure that reliable funding will be available to sustain this program in the future, e.g. through grants or trust funds. It is recommended that funding be either pooled or coordinated in support of the Master Plan to ensure easier access to funds, and to move away from donor driven project funding.

MALAWI'S MPRS/MGDS IMPLEMENTATION MONITORING SYSTEM

28. In 2002, the government prepared the MPRS as a framework for implementing government programs. It contained four pillars: pro-poor growth, development of human capital, improving quality of life of vulnerable people, and good governance. This strategy has since been updated and the new Malawi Growth and Development Strategy (MGDS), was approved in 2006. In both strategies, the government recognizes that M&E is key to successful implementation.¹⁹²

29. The first MPRS progress report of September 2003, however, showed that the government was not in a position to assess the impact of the implementation of the strategy "in the absence of a workable monitoring framework and reliable data."¹⁹³ For data, the MPRS monitoring framework depended heavily on the central, sector and line Ministries' administrative systems, whose capacity was severely constrained by limited human resources. Several studies identified weaknesses in the M&E system at various levels of government. The IMF/IDA Joint Staff Assessment of the second MPRS progress report noted that "a well functioning M&E system is not yet in place" and identifies this as an area where significant improvements need to be made.¹⁹⁴ The September 2004 M&E systems review found that "most ministries do not have operational M&E units, work plans or separate budgets for M&E activities, and that in some cases planning officers responsible for monitoring activities accord them a low priority".¹⁹⁵ The review also found that the weak institutional framework at central, district and community levels hampered MEPSD's ability to obtain timely and relevant data on activities.

¹⁹² It should be highlighted that, in Malawi, as in most other PRSP countries, monitoring poverty reduction strategies is first and foremost about measuring progress towards a high-level long-term goal. In the case of the MPRS, 51 indicators were selected to be monitored. Beyond the issue of the appropriateness of the indicators chosen, most measure outcomes via sophisticated surveys that are at best undertaken once a year, but more typically done every three to five years. While high-level outcome indicators are useful to ascertain the effects of interventions, managing implementation progress requires high-frequency information. This is consistent with the widely accepted definition of monitoring as: "a continuing function that uses systematic collection of data on specified indicators to provide management and the main stakeholders of an ongoing development intervention with indications of the extent of progress and achievement of objectives and progress in the use of allocated funds." (Source: Glossary of Key Terms in Evaluation and Results Based Management, DAC Working Party of Aid Evaluation, OECD, 2002. Available on OECD's Web site at: <http://www.oecd.org/dataoecd/29/21/2754804.pdf>)

¹⁹³ Source: IMF/IDA Joint Staff Assessment of Malawi Poverty Reduction Strategy Paper-Progress Report, October 2003.

¹⁹⁴ Source: IMF/IDA Joint Staff Assessment of Malawi Poverty Reduction Strategy Paper Second Annual Progress Report, July 2005

¹⁹⁵ Chirwa, Ephraim, Poverty Monitoring Systems in Malawi: An Analysis of Institutional Arrangements, (report submitted to the World Bank), September 2004.

BOX 11.4: ADOPTING A RESULTS-BASED APPROACH TO MANAGING AND MONITORING IMPLEMENTATION OF THE MGDS

The focus on achievement of results that should lead to development of sustainable M&E systems, not the other way around. The implication for Ministries/Sectors is that more frequent monitoring is required (monthly or quarterly) to determine implementation progress since few people can manage based on data produced annually. A major source of this information can be administrative data systems, assuming data can be disseminated quickly. This is an area where Ministries leading implementation in their sector should focus their efforts, with assistance from MEPD and donor partners. A number of technical assistance projects in this regard are already underway, e.g. in the Ministries of Education, and Health (in particular for HIV/AIDS and malaria), and through development of the Malawi Social and Economic Database. A more results-based approach to managing implementation can help focus efforts toward interventions (and thus indicators) most closely linked to the higher level outcomes, yet can be managed towards in the short term. Once priority areas are set, the process can be to further refine the indicators.

An example of managing for results as applied to the MGDS can be taken in the first indicator of the MGDS Results Framework: *“increasing the number of international tourists to Malawi by x percent a year.”* The traditional approach to project implementation would typically monitor all the streams of work that have been identified as outputs and key actions. These include:

1. Pricing service and quality of industry competitive with region
2. Measure of quality of parks, whether managed by the private sector or communities
3. Reach of tourism products to domestic, regional and international markets
4. Establishing a monitoring system for tourist trends
5. Rehabilitate targeted national parks, game reserves and wildlife
6. Zone or demarcate all areas with tourism potential along the lake
7. Upgrade to “all-weather” roads leading to key tourist attractions
8. Enforce regulatory framework for standards/quality of tourism
9. Enforce protection of national parks wildlife
10. Create clear law and regulations on land access for tourism development

While some and perhaps all of these 10 things might be important and necessary, they may not lead to increasing tourism. It is difficult to rank the importance, urgency or correct sequencing of each item or assess how much each one might contribute to the goal of increasing tourism. Many of these actions might take years to accomplish and each one of them might require its own monitoring system. The assumption or logic is that undertaking activities in each of the 10 streams of works will eventually result in achievement of the desired outcome. An alternative approach might be to invite key players in the tourism industry to a workshop and ask them to funnel the outcome of increasing the number of tourists into various market segments: by types of tourist (such as conventions and business conferences, individual tourists, tour groups), or by nationality (e.g. South Africans, Zambians, Germans, etc.). Based on the best analysis available, the group might decide to establish some sub-targets to be achieved within the following six month period, e.g. *“increase the number of South Africans visitors by x percent (compared to the previous year),”* or *“increase the number of business conferences around the lake area by y percent.”* The idea would be to bring a number of teams tasked with addressing this “result” to figure out whatever it would take to achieve the sub-targets

The teams, with the support of their sponsors in the Ministry of Tourism, will set out to drive at these various initiatives directly linked to the larger goal of increasing tourism. These may include some of the 10 things listed above, but most likely will involve a whole range of other things that one might not know in advance. These mini-projects, with individual focal points of accountability, broken down into manageable short-term challenges, can begin the process of uncovering what it takes to drive at the bigger goal and begin to identify the systemic issues, some of which might not have been previously identified. More importantly, it focuses the efforts on monitoring the things that matter most (the number of tourists and the various breakdowns) rather than on setting up a mega-monitoring system of all the inputs, outputs, activities and processes.

30. In 2004, MEPD prepared an M&E Master Plan to serve as a framework to assess, monitor, evaluate and report on MPRS implementation, and the plan has since been updated to meet the M&E needs of the MGDS. The Master Plan could be interpreted to mean that MEPD should: (1) be the focal point for coordinating priorities of the MPRS; (2) engage in the

collection and reporting of program and project level progress at the various levels of government; (3) conduct sector policy impact assessments; and (4) mobilize resources from the international community. The Master Plan further details monitoring activities at community, district and sector level, and reporting through a multi-layered vertical hierarchy to the National Assembly and the Executive branch. It also involves assessing the impact of government policies on beneficiaries. The Master Plan has been endorsed by major donors, and they are providing funding for its implementation.

31. The role envisaged for MEPD is extremely ambitious, however, particularly given the staffing, financial resources, and management expertise available. Unless the number of professional staff at the MEPD increases significantly, it will be impossible to meet these expectations. MEPD has rightly emphasized its role as that of a partner to, and coordinator with, implementing ministries/agencies. It has also emphasized that while it has the responsibility to establish a national monitoring framework, it is up to the ministries and implementing partners to put the monitoring systems in place and to use that information for managing progress. MEPD has instead focused on mobilizing donor resources and identify appropriate technical assistance for these agencies to support setting up monitoring systems. In fact, MEPD's limited resources can best be used to advocate, collate and analyze existing information, and disseminate the information both widely and to targeted groups.

32. An additional key challenge in facilitating the implementation of the MGDS is to ensure ownership of the national strategy by the various ministries who are actually responsible for implementation. This not only means that the indicators selected were by and large proposed by the Ministry concerned, but that the activities under the national strategy are included in the operational work plan of the Ministry. How a Ministry manages to translate a national goal (aspiration) into cascading goals, accountabilities and results at the regional, district and community level is a complex undertaking and where most implementation strategies stumble. A 2004 review on district planning system revealed that despite translation of national policy documents, the distribution, awareness and internalization of these instruments varies between the national and district assembly levels.¹⁹⁶ Most District Assembly staff were not familiar with key national guiding planning documents MPRSP and PSIP. Thus there is no concerted planning between the national and district level.

33. Finally, while the MGDS has been developed with a significant results-focus of its outcomes,¹⁹⁷ yet it is not sufficiently prioritized. In fact the strategy includes 148 outcome indicators, 240 output indicators, and 546 key actions to be monitored, which clearly presents implementers with a daunting task. An effort should be made to further prioritize and narrow down areas of focus to a program that is both manageable and cost effective. This process could entail the following steps:

1. Translate the Goals into operational plans which can inform the prioritization process.
2. Identify the focus areas and determine the best indicator to measure progress.
3. Use those indicators as the starting point in lieu of developing new data demands.
4. Establish targets for each indicator.

¹⁹⁶ Source: M. Alexander R. Phiri et al: A Review of District Planning Systems in line with National Policies and Planning Frameworks, December 2004.

¹⁹⁷ Annex I of the MGDS summarizes the key medium-term outcomes to be achieved.

5. Identify the source or responsible party for collecting this data.
6. Identify the frequency of data collection.

In this context, a more results-based approach to managing implementation can help focus efforts toward interventions (and thus indicators) most closely linked to the higher level outcomes, yet can be managed towards in the short term (Box 11.4).

MALAWI'S BUDGET AND EXPENDITURE MONITORING SYSTEM

34. Starting in FY2002/03, the Malawi Poverty Reduction Strategy (MPRS) was supposed to be the basis for budget planning. In formulating the budget, each ministry was expected to prepare a sector-specific plan of activities and estimates of expenditures, within an expenditure ceiling set by the Treasury. Sector funding and expenditures were expected to reflect MPRS priorities. Sector ministries generally did not provide realistic sectoral expenditure plans, however, leading to discrepancies between budgets approved and funds released, due to combination of over-optimistic projections of revenues, and overspending in some quarters without corresponding reductions in others. The situation was exacerbated by the unpredictability of donor funding, and problems arising from cash-budgeting and cash management procedures.

35. The proliferation of government bank accounts has also been a problem. The International Monetary Fund estimates that the government until recently held around 2,000 bank accounts that could not be reconciled, so that it was impossible to know aggregate available balances. Consequently, the government often had to borrow to meet its short-term obligations.

36. Weak linkages between budgeting and accounting and weak controls facilitated fiscal indiscipline and corrupt practices, which contributed to the worsening of the country's macro economic and fiscal situation in past years, making it more difficult to achieve the goals of the MPRS. After years of attempting to introduce an Integrated Financial Management Information System (IFMIS) based on CODA application software, the Malawian government abandoned the system in 2005, due to technical and political difficulties. The efficiency in the use of resources (inputs vs outputs) was to be assessed through Public Expenditure Reviews (PER). However, after the first PER was completed in 2000/01, a new PER was only carried out in 2006/07.

37. In 2003/04, MoF required each Ministry to produce quarterly expenditure reports for submission to the Cabinet Committee on the Economy; it was initially intended that disbursements for the following period would be conditional on receipt of reports, but this requirement was not strictly enforced. The MoF also requires each Ministry to produce output reports. However, this has not been enforced due to lack of capacity and non-availability of data in the Ministries.

38. In 2003 Parliament passed three Acts governing public finance and accountability: the Public Finance Management Act, which relates to the budget formulation process, expenditure control and revenue collection; the Public Audit Act and the Procurement Act which relate to budget execution and review. However, until recently, no serious efforts were made to enforce them. Sanctions are rarely applied due to system failures and weak capacity in oversight institutions. Internal audit staff lack training on internal controls, and there is no evidence that

internal audit reports are acted upon. External audits are two years in arrears because of lack of capacity in the Auditor General's office.

39. A minimum foundation of sound fiscal management is a prerequisite to functional public expenditure management and output-based monitoring. This foundation requires a centralized approach to making funds available (budget predictability) and controlling the cash flow balance (cash management). It also requires being able to account for financial inputs before being able to account for outputs.

40. In Malawi, information on budget allocations is readily available from the MoF, although MEPD has had difficulty getting information on the proportion of funds going to the various activities of the MPRS, and Members of Parliament (particularly in the Opposition) and Civil Society Organizations complain that they do not have easy access. While the MPRS was supposed to protect Pro-Poor Expenditures (PPE's) for activities aimed at human capital development, in practice the links between the MPRS and the budget are often circumvented, as also highlighted in the a 2004 DfID-funded study.¹⁹⁸

41. It is generally difficult to get complete and accurate information on expenditures. Donor funding is often provided outside the national budget framework, and is therefore under-reported. Inconsistencies between the government's budget classification system and the accounting system have made it impossible up to now to get correct figures on activities and costs. Malawi has adopted a functional classification system, which is useful for analytical purposes, but is not a tool for linking budgets to policy and planning. For output-based budgeting, i.e. looking at the efficiency of budget expenditure, budget classification needs to be programmatic.

42. In 1995, the government introduced a Medium-Term Expenditure Framework (MTEF)—a planning and budgeting tool with a three-year horizon. An MTEF is an appropriate means to link policy, planning and budgeting processes. However, in Malawi, as in other countries, it has proved difficult to implement, in the absence of sound fiscal management and linkages to a Public Sector Investment Plan.¹⁹⁹ With respect to the MTEF, it is best to take a sequenced approach and to build the system in stages, starting with a sound fiscal framework, then a budget framework, before moving to a full MTEF, to include activity and output-based budgeting (see Box 11.6).

**BOX 11.5: PUBLIC EXPENDITURE
MANAGEMENT: GETTING THE BASICS RIGHT**

- Fostering an environment that supports and demands performance before introducing performance or outcome budgeting.
- Controlling inputs before seeking to control outputs.
- Accounting for cash before accounting for accruals.
- Establishing external controls before introducing internal control.
- Establishing internal control before introducing managerial accountability.
- Operating a reliable accounting system before installing an integrated financial management system.
- Budgeting for work to be done before budgeting for results to be achieved

Source: Adapted from World Bank, Public Expenditure Management Handbook, 1998, p. 8.

¹⁹⁸ Source: Rakner, Lise, Luke Mukubvu, Naomi Ngwira, Kimberly Smiddy, Aaron, Schneider: "The Budget as Theatre—the formal and informal institutional makings of the budget process in Malawi", July 2004.

¹⁹⁹ "Medium Term Expenditure Frameworks—panacea or dangerous distraction?," Oxford Policy Management, Ibid.

Public Financial Management Work in Progress

43. The government sworn in during May 2004 publicly committed to strengthen management of public resources, instill fiscal discipline, and stamp out corruption, and began to seriously address issues of public financial management.

44. The government has started work on improving the input budget system. They are introducing a centralized payment system and moving towards a single Treasury account structure, consolidating the approximately 2,000 existing accounts to avoid mismanagement and unnecessary borrowing. This is a critical step towards accounting for inputs. The Treasury recently drafted new instructions to support implementation of the 2003 Public Finance and Management Act. Donor common funds are to be included in the national budget, and parallel funding captured and made more transparent in the system.

45. The Accountant General is introducing a new Chart of Accounts, which will eventually be directly linked to output-based budgets for individual cost centers, and allow tracking of expenditures against each government agency's activities. The new Chart of Accounts is based on a subset of international standards (IMF Government Financial Statistics) and reconciled with the budget classification system, which is important for output budgeting. It specifies

BOX 11.6: LESSONS FROM EXPERIENCE WITH MTEF

There are three levels of development in defining a medium term framework:

1. A Medium Term Fiscal Framework (MTFF) is the first, necessary step to an MTEF. It typically contains a statement of policy objectives and a set of medium term macro and fiscal targets and projections
2. A Medium Term Budget Framework (MTBF) build on the first by developing medium term budget estimates for individual agencies. The objective is to allocation resources to strategic priorities consistent with overall fiscal objective. This provides some degree of predictability while ensuring overall fiscal discipline.
3. A Medium Term Expenditure Framework (MTEF) develops the approach further by adding elements of activity and output based budgeting to MTBF. This seeks to improve value for money of public spending as well as reinforce fiscal discipline and strategic prioritization.

Key lessons:

- Experience in OECD countries suggests that stringent conditions have to be fulfilled before full benefits are realized.
- These conditions are unlikely to be fulfilled in developing countries. However, even Medium Term budgeting can improve realism of sector budgets.
- Budget reform is only sustainable if it demonstrates early benefits to key players in the process. One critical importance is the predictability of organizational funding.
- Predictability relies on reducing gap between forecast and actual revenues, thereby reducing the need to cut expenditures during the year. Technical improvements to revenue and debt forecasting are key.
- Improvements in costing of policies and programs will take longer to achieve. They require a fuller information base.

Source: "Medium Term Expenditure Frameworks—panacea or dangerous distraction?" Oxford Policy Management Review, May 2000

responsibility/accountability by Sector and Department, and introduces a programmatic structure. It will incorporate a Medium Term Expenditure Framework, showing objectives, targets, and activities of Ministries. This will allow linking budgets to programs and the national strategy.

46. The government has now embarked on installing a new computerized general ledger system based on EPICOR software, which is also being used to establish an IFMIS in Tanzania. The government of Malawi is receiving technical assistance from Accountant General of Tanzania and his staff.

47. The government plans to incorporate the new Chart of Accounts into the IFMIS in 2006 and introduce it in five ministries: the Accountant General's Office, Treasury, OPC, Education, Agriculture, and Health. These Ministries represent 75% of the government's budget. Implementation of the first phase of the IFMIS is expected to be completed by fiscal year 2007, and the system is expected to be fully operational within two to three years.

48. While the government works on ensuring the soundness of the input-based system, it might also consider piloting in parallel an output-based budget and accountability system in the Health Sector. This Sector has a well-defined Program of Work and annual plans, which would provide a good test case to make direct linkages between policies, budgets and expenditures, through matching annual work plans with budget and accounting codes. Once these linkages have been successfully introduced in relation to the Health Sector work program and budget, the approach could be applied across all government programs.

49. The government is to be commended for its current efforts to improve public expenditure management. However, it should recognize that the goal of output-based budgets is ambitious. Few countries have them. Besides, introducing an IFMIS is not a panacea. The track record for IFMIS solutions in the public sector is not encouraging. Unless a reliable accounting system is already in place to be computerized, IFMIS is liable to fail again. IFMIS can support and improve on the existing system, not create it. The system requirements for the government's core business processes need to be clearly understood and articulated. The electronic system needs to be adapted to fit the business processes, rather than adapting those processes to the software's predetermined solutions, and expecting everybody involved to change their behavior to accommodate the new system. The government should incorporate change management to complement introduction of any major new system.

POLICY RECOMMENDATIONS

50. There are a number of policy improvements that the government can introduce to strengthen M&E systems. Some of these could be introduced with immediate effect, while other may take longer to achieve and implement.

Short- to medium-term reforms

- The government should continue to mobilize grant funding for the survey program included in the Statistical Masterplan of the NSO. These donor funds should be pooled

(programmatically as opposed to projectized) to reduce the transaction cost of accessing them.

- Develop a more effective dissemination strategy of the key messages emanating from the poverty monitoring program, with a special emphasis on policy makers. Briefing notes and presentations have proved to be more effective than technical reports.
- Continue to train more staff to analyze survey data.
- The MGDS articulates ambitious goals for Malawi's future. These goals need to be translated into operational work plans for each ministry, and more importantly for the different communities being affected by them. That process can help prioritize the areas of focus for the government.
- Sector ministries should invest in improving administrative data and getting the information out faster. Strategy monitoring requires considerably more high-frequency data to be used as a feedback loop to manage progress.
- Continue to establish sound fiscal management, including cash management and the predictable flow of resources to agencies.
- Undertake a pilot exercise in the Health Sector to test ways to make direct linkages between policies, budgets and expenditures through matching annual work plans with budget and accounting codes. This should initially be set up as a parallel system until the input accounting system has been established and is working well.
- Incorporate change management with the introduction of the new IFMIS.

Long-term reforms

- Take a more sequenced approach to medium term frameworks (see Box 11.6 above).
- Promote a more results-based approach to managing implementation. The key challenge in Malawi is not simply monitoring, but execution. The premise is that the act of implementation towards meaningful results will lead to building monitoring capacity, and not the other way around.
- Establish more secure financial basis for support of the survey program, instead of relying on annual fund-raising efforts.
- Develop a core group of expert analysts capable of analyzing survey data and disseminating it effectively. This cadre of experts can be drawn from government, civil society, think tanks, or universities.

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