Macroeconomic Policies and Poverty Reduction in Malawi: Can we Infer from Panel Data

RESEARCH REPORT

Ephraim W. Chirwa
University of Malawi, Chancellor College
Department of Economics
PO Box 280, Zomba, Malawi.
Email: echirwa@yahoo.com

January 2005

Table of Contents

List of Tables

List of Figures

Executive Summary

Malawi is one of the countries in the world with the highest incidence of poverty. In 1998, it was estimated that about 65.3 percent of the population lived below the poverty line. Most of the poor live in the rural areas where the agricultural sector is the principal source of livelihoods. Malawi has witnessed an increase in poverty against the background of the many pro-market macroeconomic policy reforms that have been implemented in the past two decades.

Since 1981 Malawi has been implementing various macroeconomic policies with the objective of liberalising the economy – moving away from an environment with greater state activities to the one that relies on the private sector. Most macroeconomic policies focused on liberalisation of international and domestic trade including liberalisation of agricultural prices and marketing, removal of agricultural subsidies, reduction in trade tariffs and removal of non-tariff barriers to trade, liberalisation of the exchange rate system, liberalisation of the financial sector and interest rates and provision of investment incentives. Nonetheless, the macroeconomic policies that have been implemented during the reform period were not based on empirical analysis and fuller understanding on their effects on growth and poverty reduction. This resulted in poor sequencing of policies and in some cases in policy reversals. Most of the policy reforms were implemented by 1995. Nonetheless, the performance of the economy has not improved: growth in gross domestic product has been low and erratic, price instability has been high and poverty has increased. Recent poverty data presents opportunities to identify macroeconomic policies or variables that need to be influenced by macroeconomic policies in order to reduce poverty particularly in rural areas where the poor mostly live.

The main question that this study addresses is whether household data could provide information on the target variables that should be the focus of macroeconomic policies in Malawi. While many macroeconomic policies have been implemented, variables at household level that could be linked to macroeconomic policies include agricultural output and prices, employment and wages and changes in the distribution of land. This study uses matched panel household data between 1998 and 2002 to examine the relative roles of employment opportunities, land ownership and agricultural prices in reducing poverty. The movement in these intermediate variables can be linked to macroeconomic policies that have been pursued in the past decade such as domestic and international trade policies, investment policies and land reforms.

An econometric model of changes in poverty status on changes in policy-related variables while controlling for initial conditions was estimated to investigate the relative importance of macroeconomic policies. The study focused on the impact of changes in land ownership and household assets, changes in salaried employment and changes in agricultural prices on the probability of escaping poverty and falling into poverty into rural areas. The initial conditions in 1998 included in the model are sex of household head, age of household head, education of household head, household land size, participation in salaried employment by household head, household assets, ownership of livestock, operation of a small business and average household size.

The following are the main findings of the study:

a)   The initial conditions are more important in explaining the probability of falling into poverty than in explaining the probability of escaping poverty. Only participation in salaried employment for the household head significantly increases the chance of escaping poverty among those that were poor in 1998. Smaller households, potentially due to low dependency, are more likely to escape poverty. Among the non-poor in 1998, male-headed households, young and older households, households with less educated heads, households with a low asset base and larger households were more likely to fall into poverty.

b)   The changes in policy-related or initial conditions variables explain changes in poverty more importantly among those that were poor in 1998 than for those that were non-poor in 1998. Among the non-poor in 1998, those that accumulated assets and grew groundnuts were less likely to fall into poverty in 2002.

c)   Among the poor in 1998, changes in land sizes and asset accumulation increased the probability of escaping poverty in 2002 while production of local maize and groundnuts by poor household reduced their probability of escaping poverty in 2002.

d)   The variations in the effect of changes prices of agricultural produce by the poor and non-poor suggest that domestic trade liberalisation benefited the non-poor while the poor were the likely losers. On average, the poor experienced a decline in the price of groundnuts while the non-poor experienced a decrease in the real price. With the liberalisation of agricultural marketing activities, private traders take advantage of the absence of regulation and exploit the poor (due to low bargaining power) through low effective prices (partly due to business malpractices).

e)   Overall, the results show that macroeconomic policies that promote salaried job opportunities in rural Malawi which may enhance the asset base of poor households and land redistribution policies have the greatest potential to reduce poverty.

Macroeconomic Policies and Poverty Reduction in Malawi: Can we Infer from Panel Data [*]

Ephraim W. Chirwa[†]
University of Malawi, Chancellor College

Version: January 2005

Abstract: Malawi is one of the early adopters of structural adjustment reforms in which various macroeconomic policies have been implemented since 1981. In spite of the many reforms Malawi remains one of the poorest nations and about 65 percent of the population live below the poverty line. This study exploits recent household panel data between 1998 and 2002 to infer macroeconomic policies that can effectively reduce poverty. The results reveal that macroeconomic policies that facilitate the redistribution of land, creation of salaried employment opportunities and accumulation of assets have the greatest potential in reducing poverty in rural Malawi. Although, trade policies have been actively pursued in Malawi, the rural poor have not benefited from trade liberalisation and falling agricultural prices reduced the probability of the poor to escape poverty.

1.   Introduction

Malawi is one of the first countries in sub-Saharan Africa to implement structural adjustment programmes under the auspices of the World Bank and the International Monetary Fund. Malawi adopted structural adjustment programmes in 1981 following an economic crisis in the late 1970s that manifested in negative growth rates in gross domestic product in 1980 and 1981. The analysis of the economy revealed that there were structural rigidities that hindered the operation of the market mechanism, some of which were a result of government interventions in the market. Structural adjustment reforms were aimed at restoring economic fundamentals that are necessary for the markets to generate economic growth.

The Malawi government has implemented several economic policies that have led to the liberalisation of the economy. In spite of the long period of

---

[†] Associate Professor of Economics, Department of Economics, University of Malawi, Chancellor College, PO Box 280, Zomba. Email: echirwa@yahoo.com.

economic reforms, Malawi remains one of the poorest countries in the world. GOM (2002b) notes that the impact of structural adjustment programmes on poverty has been minimal and poverty has increased in the past decade. Growth in gross domestic product has been low and erratic and the structure of production remains dominated by low-productivity traditional agricultural products. In 1998 the integrated household survey revealed that 65.3 percent of the population were poor with consumption of basic needs below the minimum level of MK10.47 (US$0.34) per day (GOM, 2000). Thus, although Malawi had implelented most economic policy reforms, the qualitative poverty monitoring study conducted in 2000, however, revealed that the poverty situation was worsening due to several factors some of which were a result of economic liberalisation, including liberalisation of agricultural marketing and devaluation of currency that consistently led to inflation (GOM, 2002a).

Although, Malawi has long experience with policy adjustments, we have very little understanding of macroeconomic policies that have positive impact on changes in poverty status. This study attempts to evaluate the impact of alternative macroeconomic policies on changes in poverty in Malawi using household level panel data. Although many economic policies have been implemented during the reform period in Malawi, the study focuses on the role of initial conditions in influencing changes in the poverty status of households and the relative importance of agriculture, agricultural trade liberalisation and employment policies in rural Malawi.

It is worth noting that the agricultural sector remains the important sector for livelihoods in rural Malawi, which accounts for more than 80 percent of the population. Agriculture accounts for nearly 40 percent of gross domestic product, 80 percent of export earnings and is the main economic activity for 71 percent of the rural population (Chirwa and Zakeyo, 2003). Hence, issues of equitable distribution of land, rural employment and agricultural produce prices are important in understanding poverty in Malawi (Mukherjee and Benson, 2003). Smallholder agricultural land in Malawi remain under the customary tenure system in which the rights to sell land are restricted and land acquisition is through subdivision from family members or traditional leaders.

The paper is organized as follows. The next section presents a review of economic reforms and resulting economic performance in Malawi. Section 3 presents the analytical framework, methodology and estimation techniques used in the study. The empirical evidence on the link between macroeconomic policies and poverty reduction is presented in section 4. Section 5 presents concluding remarks and policy implications.

2. Macroeconomic Policies and Economic Performance in Malawi

Macroeconomic policies in Malawi have evolved over time since independence in 1964. Most of the macroeconomic policies have been geared towards facilitating or hindering domestic and international trade. The early economic policies were motivated by the structuralist view to development which advocated intervention in the markets. The first fifteen years of independence was pre-occupied by import-substitution policies with associated restrictive international trade policies and limited emphasis on export-orientation. This regime was followed by a transitional regime in which Malawi pursued a series of structural adjustment reforms by opening up various sectors of the economy with emphasis on export orientation. The third regime is associated with export orientation policies in which exports of most agricultural products were completely liberalised, with export licences only required for maize and international trade had become almost free.

Table 1 divides the policy regimes into three periods in Malawi since independence in 1964. The first policy regime is the pre-reform period between 1964 and 1980 in which the Government was actively involved in market interventions as it pursued import substitution policies. The main objective of policies during this period was to diversify the economy away from the agricultural sector through increased import-substitution industrialisation, thereby generating sustainable employment opportunities (GOM, 1971). Trade policy was central in pursuant of this import-substitution strategy. The pre-reform period was characterised by direct government involvement in economic activities through investments in state-owned enterprises and state-holding

corporations that in turn invested in various sectors of the economy including agriculture, manufacturing and financial sectors.

The Agricultural Development and Marketing Corporation (ADMARC), a state marketing agency, played a major role in the agricultural development strategy as a monopsony buyer of smallholder produce and a supplier of agricultural inputs, besides investments in estate agriculture and other commercial investments. In the manufacturing sector, emphasis was on import-substitution policies including the maintenance of an overvalued exchange rate system through a fixed peg, limited tariff protection and extensive use of non-tariff barriers to trade such as import and export licensing, foreign exchange rationing, industrial licensing and granting of exclusive monopoly rights. Trade during this period become more restrictive in the late 1970s. Others have, however, argued that such a restrictive trade regime was motivated by the revenue needs to finance the budget (World Bank, 1989; Mulaga and Weiss, 1996).

The second regime is the reform period between 1981 and 1994 in which the Malawi Government actively implemented structural adjustment programs under the auspices of the World Bank and the International Monetary Fund.[1] The adjustment programs aimed at diversifying the economic base, ensuring appropriate price and incomes policy, increasing efficiency and incomes of smallholder farmers, improving the policy environment for manufacturing and trade and restructuring of fiscal budgetary allocation and expenditure (Chirwa and Zakeyo, 2003). Ahsan et al. (1999) and Mulaga and Weiss (1996) argue that Malawi had undergone two phases of policy reforms between 1981 and 1994. The first phase, 1981-6 is characterised by emphasis on domestic trade policy including fiscal and external stabilisation, restructuring of major state-owned and private enterprises, periodic increases in interest rates and agricultural output prices, limited liberalisation of prices and limited liberalisation of entry into manufacturing. However, the end of this period experienced macroeconomic instability arising partly from increases in international transport costs due to

---

[1] Chirwa and Zakeyo (2003) provide a detailed description of the various policies and the extent to which they were actually implemented and the resultant impact on the outcome variables.

4

the intensification of the Mozambican civil war and the influx of refugees.[2]

The trade orientation during this period was more in favour of exports particularly between the period 1987 and 1994 as articulated in GOM (1987) through an export promotion strategy. Trade policy was also important during this regime particularly policies towards liberalisation of international and domestic trade. Although trade policy was central in the pre-reform and reform periods, there was no explicit objective of reducing poverty through trade or economic policies. The emphasis was on growth, without articulating how such growth is likely to result in distribution.

The second phase, 1987-94, was characterised by hesitant liberalisation of trade and tariff policies manifested in high macroeconomic instability and poor sequencing. There was a concerted effort on domestic trade liberalisation especially with respect to agriculture and the financial system. In 1987, through the Agriculture (General Produce) Act, the marketing of smallholder agricultural produce was liberalised allowing the participation of private traders in domestic and export markets. This was followed by the liberalisation of prices for agricultural produce with the exception of maize, cotton and tobacco. In 1990, the marketing of agricultural inputs that was previously by the ADMARC was also deregulated and the phased removal of fertiliser subsidy was completed by 1991. Reforms in the agricultural sector are characterized by poor sequencing with markets being liberalised before deregulation of prices. Interest rates were liberalised by 1988 and entry into the financial sector was liberalised in 1989, allowing entry of new banks in the financial sector. Furthermore, entry into manufacturing was also liberalised in 1991 after completion of the phased de-control of prices.

---

[2] These developments increased the current account deficit to 13 percent of gross domestic product in 1986 from 7 percent in the previous year and the fiscal deficit also increased to 13 percent of gross domestic product.

Table 1 Major economic policy actions under different policy regimes, 1964 - 2004

Period	Period	Domestic Policy Actions	International Trade Policy Actions
Pre-Reform Period	1964–1980	• Active government involvement in economic activities (Malawi Development Corporation (MDC) and ADMARC investments). • Macroeconomic stability - low and stable inflation, low and stable interest rates. • Preferential lending to agricultural sector.	• Malawi – Botswana reciprocal trade agreement in 1968. • Overvalued exchange rate system - fixed peg. • Limited tariff protection. • Non-tariff barriers to trade such as import licensing and implicit foreign exchange rationing.
	1981–1986	• Periodic increases in interest rates and agricultural prices. • Restructuring of state owned enterprises. • Liberalisation of industrial output prices.	• Periodic devaluation of the Malawi Kwacha. • Increases in trade taxes and foreign exchange rationing.
Reform Period	1987–1994	• Liberalisation of the financial sector and interest rates between 1987 -1989. • Removal of preferential lending to agricultural sector in 1990. • Liberalisation of agricultural marketing services (output in 1987 and inputs in 1990). • Liberalisation of some agricultural produce prices in 1988. • Removal of fertiliser subsidies by 1991. • Privatisation of state-owned enterprises. • Liberalisation of entry into manufacturing in 1991.	• Periodic devaluation of the Malawi Kwacha and eventual floatation in February 1994. • Elimination of quantitative trade restrictions and foreign exchange rationing. • Introduction of duty drawback system in 1988. • Introduction of surtax credit scheme in 1989. • Bilateral trade agreement with South Africa in 1991. • Reductions in tariffs leading to a maximum of 75 percent in 1994.
Post-Reform Period	1995–2003	• Removal of restrictions that prevented smallholder farmers from producing and marketing high value crops in 1995. • Reduction in base surtax to 20 percent in 1996. • Liberalisation of prices for all crops except maize and introduction of a maize price band in 1996. • Privatization of state owned enterprises since 1996. • Elimination of the maize price band in 2000.	• Introduction of EPZ incentives in 1995. • Export levy on tobacco and sugar in 1995 and eventual removal in 1999. • Bilateral trade agreement with Zimbabwe in 1995. • Removal of import and export licensing in 1997. • Elimination of import duty on raw materials for manufacturing in 1997. • Devaluation of the Malawi Kwacha in 1998. • Reduction of maximum tariff to 40 percent in 1996; to 35 percent in 1997; and to 25 percent in 1999. • COMESA Free Trade Area by 2000.

Source: Chirwa and Zakeyo (2003)

Another significant policy instrument during this period was the exchange rate management. In the late 1980s and early 1990s, the government pursued a policy of periodic devaluation of the Malawi Kwacha combined with a system of foreign exchange allocation by the Reserve Bank until it was abolished in 1991. Over the period, 1983-93, the Malawi Kwacha was devalued by more than 300 percent and in February 1994, the Malawi Kwacha was floated on the foreign exchange market leading to its depreciation by more than 300 percent by the end of the year. However, while the nominal exchange rate (US dollar per Malawi Kwacha) depreciated substantially, the real effective exchange rate had at times appreciated. World Bank (2003) attributes the appreciation of the real effective exchange rate to the high levels of inflation that averaged about 35 percent per year between 1995 and 2000.[3]

The third policy regime is the post-reform period starting from1995 after major economic policies were implemented and the economy was more open to domestic and international trade through tariff reductions under multilateral, regional and bilateral trade agreements compared to the period before economic reforms.[4] The emphasis during this period has also been on growth with very little emphasis on the distributive nature of such growth. The post reform period is characterised by policy refinements. Domestic trade policies continued to focus on the liberalisation of the agricultural sector. In the agricultural sector, the Malawi Government removed restrictions that prevented smallholder farmers from producing and marketing high value crops such as burley tobacco in 1995. This was followed by the liberalisation of prices for all agricultural crops except for maize in 1996. The maize pricing policy changed from one with differential pan-territorial and pan-seasonal parity pricing to a price band which ADMARC was expected to defend in 1996, but was eventually abandoned in 2000. The base surtax rate was reduced to 20 percent by 1996 from its 25 percent level in 1992. The government also continued the privatisation of state owned enterprises

---

[3] Devaluation of the Malawi Kwacha was one of the conditionality in structural adjustment reforms supported by the international financial institutions, and it can be therefore argued that some of the policy reforms contributed to macroeconomic instability and the creation of risky environments that World Bank (2003) attribute to the failure to sustain growth in Malawi.

[4] Adjustment policies were and are still being implemented during this period and its identification as a post-reform period is relative and justified on the basis that the policies being

through the National Privatisation Programme from 1996, but this was suspended in 2001 due to lack of tangible benefits.

International trade policies were geared toward providing incentives for export production. This period is associated with the strengthening of regional integration and trade openness within regional blocs. The government introduced manufacturing in bond and Export Processing Zones (EPZ) schemes in 1995. However, an export tax was introduced in 1995 on traditional exports of tobacco and sugar to encourage diversification into non-traditional exports, but was eventually removed in 1999. Malawi entered into a reciprocal bilateral trade agreement with Zimbabwe in 1995 which accords duty free status on all goods that have at least 25 percent local value-added and that conform to the national standards of the importing country. Malawi also acceded to the Common Market for Eastern and Southern Africa (COMESA) free trade area, which commenced towards the end of 2000. The countries that have acceded to the COMESA free trade area have reduced tariffs on intra-trade by 60-90 percent, which allow imports of finished goods from these countries duty free while imports of raw materials and intermediate goods from other countries attracting duty. Tariffs were also substantially reduced and trade become open in the post-reform period. In 1997, export and import licenses were no longer required and duty on imports of raw materials for the manufacturing sector was eliminated. The number of tariff bands in Malawi was reduced and the maximum tariff fell to 40 percent in 1996 from 70 percent; then to 35 percent in 1997 and 25 percent in 1999.

In spite of the many economic reforms that have been implemented in Malawi, albeit with sequencing problems, the economic performance has not significantly improved. Table 2 shows some of the macroeconomic indicators between 1973 and 2002. The growth in real gross domestic product in Malawi has been erratic with higher average growth rates in the 1970s, but declining to 0.6 percent in the early 1990s. In the late 1990s, the economy grew at 6.3 percent but there has been a slow down in the growth of the economy more recently. World Bank (2003) attributes this slow growth to the high risk environment characterized by high inflation, volatile exchange rate, poor functioning and

---

implemented are to a large extent just fine-tuning the previous policy reforms.

oligopolistic markets, weak and unreliable public services; consequently leading to shift into production of low value subsistence crops by farm households, scaling down manufacturing activities and increased investments in low risk assets such as Treasury Bills.

Table 2 Selected macroeconomic indicators, 1973 – 2002

Indicator	1973 - 79	1980 - 89	1990 - 94	1995 - 99	2000 - 02
GDP Growth (%)	5.9	2.0	0.6	6.3	0.6
Inflation (%)	8.4	16.6	20.0	41.8	26.6
Fiscal Deficit/GDP (%)	-7.2	-9.4	-7.4	-9.4	-8.6
Money Supply Growth (%)	13.3	18.3	28.5	35.0	26.5
Exchange Rate (MK/$)	-0.85	1.07	2.2	24.4	76.3
Real Effective Exchange Rate	88.8	93.1	84.0	66.3	62.03

Source: Chirwa and Zakeyo (2003)

The economic environment has also been characterised by high price instability particularly during the period of adjustment. Inflation has averaged above 15 percent since 1980 and was highest between 1995 and 1999 compared to 8.4 percent in the 1970s. It is also noted that the period of structural reforms is also associated with high growth in money supply, high fiscal deficits and massive devaluation or/and devaluation of the Malawi Kwacha. There has also been a depreciation of the real effective exchange rate, however, with episodes of real appreciation in some years (Chirwa and Zakeyo, 2003).

Nonetheless, it should be noted that like in many other countries implementing economic reforms, the sequencing of reforms in Malawi has been very poor and characterized by policy reversals. For instance, Chirwa (1998) notes several sequencing problems in agricultural sector reforms such as removal of subsidies on inputs before increases in maize producer prices and the liberalisation of export crop prices in advance of agricultural marketing liberalisation. Moreover, the reform period in Malawi has been characterized by high macroeconomic instability, little progress in improving infrastructure and deficiencies in regulation and ineffective institutions. The liberalisation programme has been largely unmanaged consequently ignoring the role of complementary and compensatory policies (Chirwa, 2004a) with most reforms being implemented in an institutional vacuum and with the belief that the

private sector will quickly capitalize on the opportunities that liberalisation offered. However, in agricultural marketing liberalisation for example, most private traders experience problems of access to financial markets, storage facilities and marketing while farmers remain unorganised and are easily taken advantage by private traders.

In spite of problems of sequencing and management of policy reforms, there have been less direct government interventions in the Malawian economy since 1995 compared to the period prior to economic reforms, and the problem confronting the policy-makers is to identify policies that are going to lead into rapid economic growth and reduction in poverty. The pervasiveness of poverty requires concerted efforts and more focused strategies in order to reduce poverty in Malawi. Like many other developing country, Malawi, has formulated its poverty reduction strategy (GOM, 2002b) articulating policies that will be pursued to reduce poverty. However, the problem with the Malawi Poverty Reduction Strategy Paper (MPRSP) is that it provides a wish list of policies without identifying the critical macroeconomic policies that are necessary for rapid reduction in poverty.[5] Chirwa (2004b) for instance notes that in the strategies for increasing agricultural incomes, reducing land shortages (which is a critical factor in agricultural productivity and technology adoption) is ranked seventh after expanding access to agricultural inputs, research and extension services and improving access to markets, yet land availability is a necessary condition for the effectiveness of other strategies in agriculture. This suggests that for the agricultural sector to generate pro-poor growth, the question of land reforms should be an important strategy in Malawi agriculture.[6] Many studies in Malawi find a positive relationship between land size and productivity or land size and adoption of technologies (Green and Ng'ong'ola, 1993; Zeller et al., 1998; Chirwa, 2004c, Doward, 1999).

This has also meant that the recent policy documents such as the Malawi

---

[5] Moreover, policies that have been pursued in the past are being advocated without consideration on changing the underlying constraints that contributed to their failure.

[6] In the MPRSP two land policy reform policies are envisaged – land redistribution to the landless and securing the tenure of land. According to GOM (2004) about 13 estates have been purchased for land distribution and voluntary resettlement and 450 farm families have been resettled on one of the estates.

Poverty Reduction Strategy Paper (MPRSP) have been formulated in a vacuum of empirical studies and without result-based policy analysis. While the MPRSP establishes priorities over government policies and programs, macroeconomic and sectoral policies are not strategic and very little is known on how different policies are likely to influence growth and poverty or the link between growth and poverty reduction. The MPRSP presents a wish-list of strategies and programs without attaching importance to such policies or a combination of policies in influencing the growth and poverty relationship. It is important therefore to identify macroeconomic policies that can be employed to achieve poverty reduction objectives.

Existing poverty studies in Malawi, using data from the integrated household survey, focus on the poverty profile and determinants of poverty and deduce the policy implications based on policy simulations (NEC, NSO and IFPRI, 2001; Mukherjee and Benson, 2003). These poverty studies show that the main determinants of poverty in Malawi are education, occupation, per capita land, type of crops, diversification out of maize and tobacco, participation in public works employment and paid employment opportunities. Chirwa (2004b) using household panel data also find evidence of the positive relation between average land size and the probability of escaping poverty and the probability of remaining non-poor.[7]

3. Analytical Framework, Methodology and Data

3.1 Macroeconomic Policies and Poverty Reduction

The link between macroeconomic policies and poverty reduction is indirect through the relationship between growth and poverty. Bigsten et al. (2003) argues that in order to reduce poverty, it is fundamental that economic policies should aim at promoting rapid economic growth. However, there is general agreement in the literature that growth is necessary but not sufficient for

---

[7] Chirwa (2004b) focuses on the agrarian question and the model did not include policy variables such as changes in prices of agricultural produce.

poverty reduction (Ravallion and Datt, 2002; Hoekman et al., 2001). Others argue that growth in incomes of the poor is strongly correlated with overall growth of the economy, and this fact has been demonstrated in cross-country and individual country studies (Hoekman et al., 2001). It can therefore be argued that macroeconomic policies that promote growth are likely to lead into poverty reduction. For instance, with respect to agriculture, macroeconomic policies such as trade policies and exchange rate policies will immediately be reflected in the price developments and terms of trade. In turn changes in prices will provide incentives for agricultural production and specialisation, which in turn may lead into growth and distribution of income through employment generation.

However, as the World Bank (2001) notes, the patterns of growth, the changes in the distribution of income and resulting opportunities and the rates of poverty distribution are a result of a complex interaction among the policies, institutions, history and geography of countries. Thus, countries that achieve the same growth rate are unlikely to reduce poverty in the same manner. The extent to which a given rate of growth translate into poverty reduction will depend on how distribution of income changes with growth and on initial inequalities in incomes, assets and access to opportunities that allow poor people to participate in generating growth (World Bank, 2001). Others, such as Hoekman et al. (2001), argue that for growth to have some meaningful impact on poverty, that growth must occur in sectors in which a large proportion of the poor derive their livelihood. However, Bigsten and Shimeles (2003) assert that the direction of causality of growth-income distribution-poverty relationship is still very unclear in theory as well as in empirical studies.

There are a few studies that have focused on the relationship between growth and changes in poverty exploiting panel data, but most do not link the determinants to macroeconomic policy developments. Ravallion and Datt (2002) in a study of growth and poverty in India find that initial inequality in interaction with literacy, farm productivity and asset distribution affects the relationship between growth and poverty. Bigsten et al. (2003) using panel data find land ownership, education, type of crops, dependency and location to be

important determinants of poverty in Ethiopia. In addition, Bigsten et al. (2003) find that the production of a non-traditional export crop increased households' per capita expenditure and reduced the probability of falling into poverty or of being chronically poor and increased the chance of escaping poverty. In Malawi, Chirwa (2004) in a study of access to land and poverty reduction finds that land ownership reduces the probability of falling into poverty and increases the probability of remaining non-poor.

However, modelling the impact of various macroeconomic policies on poverty reduction is extremely difficult. Most studies rely on econometric simulations to infer the impact of various policies on growth and poverty reduction; hence inference about effect of macroeconomic policies is based on *ex ante* studies (such as Ferreira and Leite, 2003). Linking macroeconomic policies and poverty reduction in *ex post* studies is made difficult partly due to the multiplicity of economic reforms implemented, the policy reversals that have characterized the policy regimes in developing countries, the quality of reforms and the lack of household data that can link changes in the policy environment to individual household welfare. Moreover, there exist substantial lags between policy announcements and the actual implementation of policies and it becomes difficult to identify appropriate policy episodes. In addition, most macroeconomic policies tend to generate poverty reduction effects in the long-term.

In this study, we are not able to resolve these methodological issues, but rather attempt to explain changes in poverty by changes in the intermediate outcomes that can be linked to macroeconomic policies.[8] For example, changes in output and prices of agricultural produce and changes in salaried employment and wages are likely to occur in the short to medium term following changes in macroeconomic policies. In Malawi, most of the economic policies during the structural adjustment period have been trade-related (Chirwa, 2004a), and the impact of price changes and employment on poverty reduction may be attributed to such trade policies and other macroeconomic policies that enable the operation

---

[8] Given the many changes that have taken place in the economic system and the social structures, this link between outcomes and poverty is imperfect. It is not possible to clearly link policies to the intermediate outcomes.

of the market mechanism.

3.2   Model Specification

Many macroeconomic policies have been implemented in Malawi under the economic reform programme (Chirwa and Zakeyo, 2003; Chirwa and Mlachila, 2004). However, it is difficult to isolate the influence of specific macroeconomic policies on poverty reduction at household level. We focus on a limited number of immediate outcomes of macroeconomic policies and explore the importance of changes in land holding, changes in agricultural prices (partly due to trade liberalisation), changes in employment and changes in wealth in explaining households' transition out of and into poverty.[9] Our approach is to study the probability of changes in the poverty status between 1998 and 2002 conditional on the household demographic and economic characteristics observed in 1998. We consider three types of changes in the poverty status based on the poverty head count ratio. Some households succeed in escaping poverty and the change in poverty is -1 and others fall into poverty and the change in poverty status is 1. Those whose poverty status did not change had a poverty status change of zero. The following reduced-form regression model is estimated conditional on whether the household was poor or not in 1998:

$$\Delta P_i = \alpha + \beta X_i + \gamma Y_i + \lambda Z_i + \mu \qquad (1)$$

where ΔP_i is the change in the poverty status between 1998 and 2002, X_i is the vector of initial conditions in 1998 including gender of household head, age of household head, household land size holdings, education of household head, assets (wealth), salaried employment, livestock ownership and business ownership; Y_i is a vector of dependency variables captured by average of 1998

---

[9] The changes in land holding are included to infer the likely impact of land proposed land reform policy in Malawi. Chirwa and Zakeyo (2003) find movements in the distribution of land among poor and non-poor households between 1998 and 2002, but do not analyse how the movements in land holdings affected poverty.

and 2002 variables including average household size; Z_i is a vector representing changes in policy related variables or changes in initial conditions including changes in land size, assets, employment and agricultural produce prices experienced by farmers who grew crops in 2002; and μ is the error term. Following Bigsten et al. (2003), we examine conditional probabilities of households falling into poverty and escaping poverty for those who were non-poor and poor in 1998, respectively.

3.3   Description and Measurement of Variables

3.3.1 Poverty Status Variables

The dependent variables in the poverty models are changes in the poverty status between 1998 and 2002 based on the poverty head count. We estimate two separate regression models, one focusing on those that that were poor in 1998 and got out of poverty in 2002 and the other on those that were not poor in 1998 but fell into poverty in 2002. The poverty status was derived from consumption expenditure data, with those that had household per capita expenditure per day less than the poverty line of MK10.47 at 1998 prices were categorised as poor in both 1998 and 2002.[10] Among those that were poor in 1998, those that got out of poverty are represented by a dummy variable equal to 1, otherwise equal to zero. Similarly, among those that were non-poor in 1998, those that fell into poverty were represented by a dummy variable equal to 1, otherwise equal to zero.

3.3.2 Initial Conditions

Ten variables capturing initial conditions are included as independent variables in the model. First, we include the headship of the household to capture the effect of gender in determining changes in poverty. Male-headed households are represented by a dummy variable equal to 1, otherwise equal to zero. Studies in

---

[10]   Real expenditure figures for 2002 obtained by deflating nominal figures by the consumer price index (CPI). However, this assumes that the poverty datum and the consumption basket between

Malawi have shown that female-headed households, who also tend to be single parents, are among the poorest in society due to differential access to capital and facilities (GOM, 2000). We therefore expect male-headed households to have higher likelihood of getting out of poverty and lower likelihood of falling into poverty.

Secondly, the age of the household head in 1998 captures the productivity of the household head, assuming that the household head is the main breadwinner. We also include age of household head squared to capture the non-linear effect of age on changes in poverty status. Initially, age may be positively related to the probability of getting out of poverty due to higher productivity, and such productivity tends to dwindle at older ages.

Thirdly, the education of the household head is a categorical variable of different education classes: 0 – never attended school; 1 – completed early primary school standards I – IV); 2 – completed late primary school (standards V – VIII); 3 – completed junior secondary school (Junior Certificate of Education); 4 – completed senior secondary school (Malawi School Certificate of Education). We expect education level to reduce poverty and increase the probability of escaping poverty and reduce the probability of falling into poverty. Fourthly, household land size in 1998 capture the importance of availability of agricultural land as a vital asset in the livelihoods of rural people. Those with more land are likely to grow adequate food and cash crops and are likely to get out of poverty and unlikely to fall into poverty.

Fifthly, we include a dummy variable equal to 1 if the household head was in salaried employment in 1998. Salaried employment provides regular and stable income for the households, and we expect salaried employment to reduce the probability of falling into poverty and increase the probability of getting out of poverty.

Sixthly, household's initial wealth is represented by the value of household assets in 1998 and a dummy variable representing ownership of livestock in 1998.[11] High initial wealth provides better platform for escaping poverty and

---

1998 and 2002 did not change.

[11] This variable captures the value of household assets such as buildings, agricultural implements, radios, tables, chairs but does not include the value of land and livestock.

reduces the probability of falling into poverty. Livestock in Malawi is a form of wealth in most rural areas and its impact on poverty is similar to that of household assets. Finally, ownership of a business activity captures the effect of non-farm activities in poverty reduction. Ownership of a non-farm business enterprise is captured by a dummy variable equal to 1 if the household operated non-farm business enterprise in 1998, otherwise equal to zero. Diversification into non-farm activities reduces reliance on agricultural income, which is highly susceptible to natural disasters and weather conditions.

3.3.3 Dependency Variables

Two variables, average household size and squared household size, are included in the models to capture the effects of dependency on the probability of escaping and falling into poverty. The average household size is computed as a simple average number of household members in 1998 and 2002. Those households with a larger number of members are expected to have higher dependency. The dependency burden is expected to be negatively associated with the probability of escaping poverty.

3.3.4 Changes/Increases in Initial Conditions and Policy Related Variables

The models also include seven variables that capture increases in the initial conditions and policy related variables. First, we include changes in household land size to infer the likely impact of a land distribution policy. This is measured by the absolute change in household land size holding between 1998 and 2002. We expect increases in land size holding to increase the probability of escaping poverty. Secondly, we capture the change in the employment status of household head between 1998 and 2002. The change in employment is measured by a categorical variable equal to -1 if the household head lost employment, 0 if the household head retained employment status of 1998 (remained employed or never employed) and a value of 1 indicating that the household was not employed in 1998 but got employment in 2002. This variable is expected to

capture the likely impact of policies that create salaried employment.

Thirdly, we also include increases in real asset values between 1998 and 2002, and expect that change in wealth status increases the probability of escaping poverty. Finally, we include increases in the prices of four food crops grown by rural households using district level real prices (measured at 1998 prices). The food crops include hybrid maize, local maize, cassava and groundnuts. The changes in prices were only applied to households that cultivated such crops in 2002. The increases in prices capture the effect of market liberalisation in the agricultural sector and increase the probability of escaping poverty. Although the supply response in these food crops is generally weak (Chirwa and Zakeyo, 2003), we expect that those that grew crops whose prices improved in real terms are more likely to move out of poverty.

3.4 Data Sources

Data used in this study comes from two surveys in which a matched panel of households was generated. The first survey was conducted by the National Statistical Office (NSO) in the Integrated Household Survey (IHS). The second survey was conducted by the Centre for Social Research (CSR) in the Complementary Panel Study (CPS). The sample in the CPS was randomly generated from the households that were captured in the IHS. Thus, the complementary panel study followed the same households between 1998 and 2002. The integrated household survey that was conducted in 1998 while the complementary panel, a sub-sample of the 1998 integrated household survey was conducted in four rounds and the fourth round was conducted in 2002.[12] Statistical techniques were used to generate a national representative sample of the IHS1998. This study uses a panel of rural households capturing 345 households interviewed in both 1998 and 2002.

The matched panel data set includes information on household

---

[12] The three first rounds of the complementary panel study did not collect information on agricultural production while the fourth round had a component on agricultural production that is comparable to the data collected in 1998.

characteristics, incomes and expenditure, assets, agricultural output and prices, non-farm economic activities including paid employment for household members. However, given the short panel used in this study, generated in the post-reform period, it is not be possible to identify policies that aim at long-term economic growth from those that have short-term impact such as stabilisation. It is also worthwhile to note that most policies were implemented prior to 1995 and changes in these outcome variables on poverty could arguably be attributed to macroeconomic policies that promote growth.

However, the main problem with the data is that the questionnaire was not designed to capture policy issues; the focus was rather on estimating poverty and monitoring changes in well-being without attempting to identify the policy changes that may have caused changes in well-being. For example, while access to credit and interest rates could have reflected changes in financial markets, the panel does not contain these variables. Another problem is that there was no one to one match of the questionnaires that were used to collect data in the IHS and CPS. For example, data on incomes and expenditure were collected under shorter recall time horizon in the CPS than the data collected in the IHS.

4. Empirical Results

4.1 Descriptive Evidence

Table 3 presents the descriptive statistics of the variables used in the model. The changes in poverty status show that the incidence of rural poverty increased between 1998 and 2002 in rural Malawi. About 77 percent of the sample households in the panel were still living below the poverty line. Only 3 percent managed to escape poverty, 5 percent remained above the poverty line while15 percent fell into poverty. Thus, the proportion of the poor in 2002 increased to 92 percent compared to 80 percent in 1998 based on the panel sample and 66.5 percent in 1998 based on the national data. Figure 1 shows the poverty incidence curves for 1998 and 2002. It is apparent that for incomes below the poverty line the cumulative distribution function in 2002 is everywhere above that of 1998,

hence the 1998 distribution displays first order dominance over the 2002 distribution. Interestingly, the few whose incomes are above the poverty line, have higher incomes per capita per day in 2002 than in 1998.
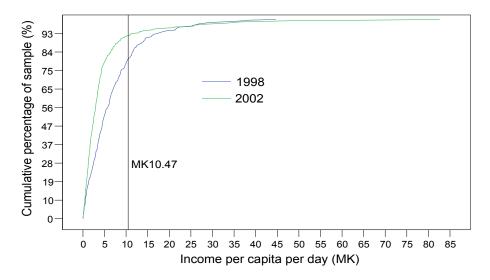
Figure 1 Poverty incidence curve for 1998 and 2002 distributions

The initial conditions also show that most households are headed by males and only 24 percent of the sample households are headed by females. Most of the household heads are middle aged, but the human capital among household heads is quite low. The average level of education of household heads in 1998 was less than completion of primary school education. Land is a critical resource for livelihoods in rural areas in Malawi, and the unequal distribution of land has been associated with poverty. The mean land holding size in 1998 for the sample households is 0.78 hectares, just adequate for subsistence farming.[13] Very few households, only 22 percent, were in salaried employment in 1998. Only 23 percent and 28 percent of household owned livestock and operated a business enterprise in 1998, respectively.

---

[13] GOM (1987) classifies smallholder farmers into three categories. Firstly, net food buyers - farmers with less than 0.7 hectares who cannot produce enough food to satisfy their subsistence needs given the technology and remain dependent on off-farm activities. Secondly, intermediate smallholder farmers - those with land holding between 0.7 hectares and 1.5 hectares who produce just enough for their survival but have very little for sale. Thirdly, net food sellers - those farmers with land holdings of more than 1.5 hectares and produce more than their subsistence needs for

Table 3 Descriptive statistics of variables

Variable	Mean	S.D	Min	Max
Changes in Poverty Status				
Escaping poverty	0.0348	0.1835	0.0	1.0
Falling into poverty	0.1536	0.3611	0.0	1.0
Remaining poor	0.7652	0.4245	0.0	1.0
Remaining non-poor	0.0464	0.2106	0.0	1.0
Initial Conditions				
Male-headed household in 1998	0.7971	0.4027	0.0	1.0
Age of HH in 1998	44.139	15.782	20.0	95.0
Age of HH in 1998 squared	2196.6	1575.7	400.0	9025.0
Education of HH in 1998	1.3159	1.0818	0.0	5.0
Household land size in 1998	0.7751	0.7557	0.0	6.8
HH in salaried employment in 1998	0.2174	0.4131	0.0	1.0
Natural log of assets in 1998	7.6158	1.4503	3.6	12.9
Household had livestock in 1998	0.2261	0.4189	0.0	1.0
Household had business in 1998	0.2754	0.4473	0.0	1.0
Dependency Variables				
Average household size	5.1638	2.1861	1.0	15.0
Average household size squared	31.429	25.946	1.0	225.0
Changes/Increases in Policy Related Variables				
Increase in household land size	1.5020	2.3656	-5.2	12.0
Change in HH salaried employment	-0.1101	0.4170	-1.0	1.0
Increase in log of real assets	-0.3517	1.6905	-11.1	4.9
Increase in hybrid maize price	0.2378	1.2946	-3.9	3.6
Increase in local maize price	3.2805	9.6886	-2.9	45.0
Increase in cassava price	-0.0382	0.3978	-3.1	4.7
Increase in groundnuts price	-0.0654	0.7232	-3.8	1.3
Sample Size	345			

Table 4 presents the socio-economic characteristics of households between 1998 and 2002 by poverty change status. Except for households that remained non-poor, the households became more female-headed in 2002, and the largest proportionate change occurring among households that drifted into poverty. Across all four groups of poverty status, there are statistically significant differences in land holding sizes between 1998 and 2002. Household land holding sizes increased substantially among households that escaped poverty from 0.48 hectares in 1998 to 2.67 hectares in 2002. Surprisingly, those remained poor increased their land holding three fold but could not get out of poverty. Across all the poverty status groups, average land holdings increased in 2002. Since smallholder land remain under customary tenure, the increase in land holding sizes can be attributed to cultivation of marginal land, existence of informal land

survival during the year.

markets or consolidation of lineage land by the household due to departure of a member of the family that owned land.

Table 4 Household's socio-economic characteristics between 1998 and 2002

Variables	Out of Poverty		Into Poverty	
	1998	2002	1998	2002
Male-headed household	0.8333	0.7500	0.9434*	0.7925
Age of household head	43.416	48.917*	43.302	50.415*
Household land size	0.4833	2.6667*	1.1057	2.1283*
HH in salaried employment	0.3333	0.4167	0.2264	0.0943*
Natural log of assets	6.7714	9.2360*	7.7901	8.0669
Household size	4.0000	3.7500	3.9434	4.8491*
	Remain Poor		Remain Non-poor	
	1998	2002	1998	2002
Male-headed household	0.7652	0.7083*	0.8125	0.8125
Age of household head	44.307	50.063*	44.688	45.188
Household land size	0.7014	2.2758*	1.1150	2.5000*
HH in salaried employment	0.2083	0.0871*	0.2500	0.2500
Natural log of assets	7.5512	8.2351*	8.7329	10.1753*
Household size	5.3864	5.5038	3.8125	4.2500

* Mean differences are significant at the 5 percent level

The role of salaried employment in reducing poverty is evident from the descriptive evidence in Table 4. The proportion of household heads engaged in salaried employment increased by 8 percentage points among those that escaped poverty. There is no change in salaried employment for households that remained above the poverty line while the proportion in salaried employment substantially declined among households that drifted into poverty and those that remained below the poverty line. The decline in employment for those that drifted into poverty and those that remained poor is statistically significant. Although, there is an increase in the accumulation of assets across poverty status groups, such increases in asset accumulation are substantial among households that escaped poverty and those that remained non-poor. The differences in assets are statistically significant in all poverty status groups with the exception of those that drifted into poverty. With the exception of households that escaped poverty, the number of household members increased between 1998 and 2002, and the increase is substantial among the households that drifted into poverty. Among the households that escaped poverty, the number of household members declined from 4 in 1998 to 3.75 in 2002, while the number of

households for those that remained poor increased. The dependency burden among those that remained in poverty has increased between 1998 and 2002, perpetuating their poverty situation. The differential household sizes between the poor and non-poor is consistent with NEC (2000) which finds that the average household size for the poor and non-poor in rural areas is 5 and 3.4 persons with dependency ratio of 1.08 and 0.68, respectively.

Table 5 presents descriptive evidence on the relation between changes or increases in policy-related variables and changes in poverty in rural Malawi. The increase in poverty is associated with unfavourable changes in the economic environment, such as net loss in salaried employment among household heads, decline in real assets and a fall in average district prices for cassava and groundnuts. These negative developments were however palliated by the increase in household land holdings, increases in the district prices for hybrid and local maize. Table 5 shows that most of the unfavourable changes occurred in households that drifted into poverty or remained non-poor. Those households that remained non-poor had increases in all the policy-related and initial conditions variables. In terms of prices, it implies that most of the households that remained poor were in districts where increases occurred in the prices of all the four crops grown by the households. The positive changes in salaried employment are also associated with the likelihood of moving out of poverty while loss of employment increased the chances of remaining poor and falling into poverty.

Table 5 Changes/Increases in policy-related variables by poverty change status

Policy Variable	Out of Poverty	Into Poverty	Remain Poor	Remain Non-poor
Increase in household land size	2.1833	1.0226	1.5743	1.3850
Change in HH salaried employment	0.0833	-0.1321	-0.1212	0
Increase in log of real assets	1.3794	-0.7366	-0.3999	0.3572
Increase in hybrid maize price	0.8558	0.6747	0.1103	0.4304
Increase in local maize price	-0.3463	3.6894	3.2133	5.7557
Increase in cassava price*	-	-0.0513	-0.0402	0.0098
Increase in groundnuts price	-0.4416	-0.1626	-0.0412	0.1368

Note: * None of the households that escaped poverty grew cassava in 2002.

There is a positive association between asset accumulation and being out of poverty and remaining non-poor. Those that drifted into poverty and those that remained poor had on average negative changes in assets. Several studies in Malawi suggest that one of the common strategies that the poor use as coping mechanism is sale of household assets.

Chirwa and Zakeyo (2003) find evidence of a decline in the average real domestic prices for major food crops in Malawi particularly for maize and groundnuts. Interestingly, the data in Table 5 show differential changes in crop prices across the poverty status groups. Regardless of the poverty status change, the price of hybrid maize in the districts in real terms increased between 1998 and 2002, but the increases were higher among households that grew hybrid maize for those that escaped poverty. With the expectation of those that escaped poverty, in which the change is negative, the price change in local maize was favourable in other poverty status group. However, it may be noted that most of the maize produced by the poor in rural Malawi is not marketed and the price benefits may have been indirect. Groundnuts are grown as cash crops, but the price developments between 1998 and 2002 show that there was a decline in real prices especially among those that escaped poverty, fell into poverty and those that remained poor.

4.2 Econometric Evidence

Although the descriptive statistics provide pointers on the factors and policy-related variables that may lead to poverty reduction among rural households in Malawi, the effect of such factors does not take into account the interaction with the other variables. The econometric evidence presented in Table 6 takes into account the various socio-economic characteristics that influence poverty outcomes. Given the panel nature of the data, the explanatory power of the models is satisfactory, 40 percent in the out of poverty model and 69 percent in the into poverty model.[14] The chi-squared statistics also show that we cannot reject the model.

The performance of initial condition variables is rather poor in the 'out of poverty' model with only the coefficient of salaried employment being statistically significant at the 5 percent level. The results show that being in salaried employment in 1998 increases the probability of the household escaping poverty. One reason for the weak performance of variables such as education and assets is that among the poor these endowments are already low. The non-significance of the initial conditions may imply that the success of anti-poverty policies may not depend on the initial household conditions, thus the poor are equally likely to be out of poverty.

---

[14] The results of the 'out of poverty/ model should be interpreted with caution given the small number of the poor that got out of poverty.

Table 6 Probit estimates for rural households moving out of and falling into poverty in Malawi

Variables	Out of Poverty			Into Poverty		
	coeff.	z-value	me (%)	coeff.	z-value	me (%)
Initial Conditions						
Male-headed household in 1998	0.0518	0.12	0.008	4.9044	3.15*	96.96
Age of HH in 1998	0.0533	1.10	0.008	-0.4941	-2.51*	-0.724
Age of HH in 1998 squared	-0.0004	-0.79	-	0.0053	2.35*	0.008
Education of HH in 1998	0.0931	0.53	0.015	-1.7514	-2.27*	-2.567
Household land size in 1998	0.0308	0.17	0.005	-0.8655	-1.27	-1.268
HH in salaried employment in 1998	1.0104	2.38*	0.549	3.3818	1.77+	3.895
Natural log of assets in 1998	0.1401	1.08	0.022	-0.8380	-2.68*	-1.228
Household had livestock in 1998	-0.3111	-0.64	-0.038	0.5890	0.97	0.738
Household had business in 1998	0.0813	0.24	0.014	0.2496	0.27	0.326
Dependency Variables						
Average household size	-0.7516	-3.92*	-0.119	1.6474	1.92+	2.414
Average household size squared	0.0541	3.64*	0.009	-0.1344	-1.74+	-0.197
Changes in Policy Related Variables						
Increase in household land size	0.1146	1.94+	0.018	0.1260	0.58	0.185
Change in HH salaried employment	1.1470	2.88*	0.182	0.3522	0.37	0.516
Increase in log of real assets	0.4219	2.50*	0.067	-1.3787	-2.52*	-2.020
Increase in hybrid maize price	0.0569	0.35	0.009	0.1472	0.68	0.215
Increase in local maize price	-0.3301	-1.73+	-0.052	0.0254	1.53	0.037
Increase in cassava price	-	-	-	0.0120	0.01	0.018
Increase in groundnuts price	-0.3108	-2.27*	-0.049	-0.9375	-3.19*	-1.374
Constant	-2.9318	-1.99*	-	12.735	3.31*	-
Number of observations	271			67		
Wald chi-squared	59.95			56.44		
Prob > chi-squared	0.0000			0.0000		
Pseudo R^2	0.4024			0.6924		

* Significant at the 5 percent level
+ Significant at the 10 percent level
me = marginal effects

On the other hand, many initial conditions variables are statistically significant in the 'into poverty' model. Although the poverty profile in Malawi reveal that that female-headed households are disproportionately poor (NEC, 2000), we find that male headship of the household increases the probability of drifting into poverty. With respect to age of household head, age reduces the probability of falling into poverty but only up to the age of 47 years after which age becomes positively associated with the probability of falling into poverty. The important role of human capital is reflected in the negative relationship between education of household head and probability of falling into poverty. Surprisingly, we find a positive relationship between household heads being in salaried

employment in 1998 and the probability of falling into poverty, with the coefficient being statistically significant at the 10 percent level. For those that were non-poor in 1998, we find evidence that that those with a strong capital base were unlikely to fall into poverty, with the coefficient being statistically significant at the 5 percent level.

The impact of the household size variable in the 'out of poverty' and 'into poverty' models are a mirror image of each other. In the 'out of poverty' model we find that the probability of escaping poverty falls as household size increases, but the probability of escaping poverty begin to increase beyond a household size of 7 members. One possible reason for this is that a larger household size may have more productive members which enhancing the income earning capacity. The coefficients are statistically significant at the 1 percent level. The opposite is true in the 'into poverty' model in which the probability of falling into poverty increases with the size of the household but in a non-linear relationship.

Most of the changes or increases in the policy-related or initial condition variables significantly influence the probability of escaping poverty but only few determine the probability of falling into poverty in rural Malawi. Households that experienced increase in cultivatable land were more likely to escape poverty, with the coefficient being statistically significant at the 10 percent level. The marginal effects show that the probability of escaping poverty just increases by 0.02 percent due to a unit increase in agricultural land. However, the increase in land is an insignificant determinant of the probability of falling into poverty. Poor households in 1998 whose head was engaged in salaried employment in 2002 had a higher chance of escaping poverty. The coefficient of salaried employment is statistically significant at the 5 percent level, and the marginal effects reveal that obtaining a job increases the probability of escaping poverty by 0.18 percent. Asset accumulation is also critical in increasing the probability of the poor in escaping poverty and in reducing the probability of the non-poor in falling into poverty. The coefficient of increase in the real value of assets is statistically significant at the 5 percent level in both models. The marginal effects show that a unit increase in the value of assets increases the probability of escaping poverty by 0.07 percent and reduces the probability of falling into

poverty by 2.02 percent.

During the economic reform programme between 1981 and 1995, the government has actively introduced macroeconomic policies such as the removal of subsidies, liberalisation of marketing and pricing of agricultural produce in order to liberalize the agricultural sector. These policies implied departure from pan-territorial and pan-seasonal prices in agriculture towards a market based pricing mechanism with spatial variations in prices based on supply and demand conditions. However, as observed above, the maize pricing was still under regulation until 2000 when the price band was abandoned. The econometric results show that households that grew hybrid maize were more likely to escape poverty through the price effect but the coefficient is statistically insignificant implying that market liberalisation did not hamper welfare and did not bring intended benefits to the farmers. On the other hand, the probability of escaping poverty for households that grew local maize is lower, implying that the price effect may have had a negative effect on poverty. Most of the households that escaped poverty experienced a decline in the real prices of local maize, but were not able to switch to hybrid maize that had witnessed an increase in real prices. The failure to respond to price incentives among the poor can be attributed to their lack of resources to purchase hybrid seeds. Similarly, increases in groundnuts prices reduced the probability of escaping poverty, partly due to the fact that the poor experienced decreases in the prices of groundnuts. However, non-poor households that grew groundnuts had a lower chance of drifting into poverty; though they experienced price decline the decline was not as substantial as the one experienced by the poor households.

What do these results tell us about macroeconomic policies that have the greatest potential for reducing poverty in rural Malawi? It appears that policies that promote salaried employment in the rural areas offer the highest opportunities to reducing poverty in Malawi. The role of salaried employment on the probability of escaping poverty is also reinforced by the initial condition of being in salaried employment in 1998. Since most of the rural population is unskilled, macroeconomic policies that promote investments in rural activities that are unskilled labour intensive have a higher chance of reducing poverty in

Malawi. More stable employment opportunities for the poor are likely to lead to accumulation of assets, which will reinforce their probability of escaping poverty.

It is also evident that a policy of land redistribution in favour of the landless poor also provides opportunities for the poor to escape poverty. The results support previous evidence on the importance of agricultural land as a determinant of poverty in Malawi (NEC, NSO and IFPRI, 2001; Mukherjee and Benson, 2003; Chirwa, 2004b). Since land in Malawi remains under customary tenure with no rights to sell, its link to poverty reduction is through growth in agricultural production - to meet the food needs and/or generation of incomes from crop sales. Chirwa (2004b) documents conditions that make a land redistribution policy feasible in Malawi. These favourable conditions include the availability of 2.6 million hectares of suitable agricultural land that remains uncultivated; decline in tobacco estate agriculture offers opportunities to government to purchase land being offered by estate owners (who are mainly Malawians); and high willingness of smallholder farmers in land constrained districts to voluntarily participate in a land redistribution or resettlement programme. However, one major constraint in land redistribution in Malawi is that government lacks financial resources to finance acquisition of land that is being offered by private holders.

The performance of the price variables in the model reveal that trade liberalisation policies which have been at the centre of the economic reform programme in Malawi have had little effects on the poor. The results show that the poor have experienced deteriorating prices for agricultural produce in rural Malawi following liberalisation of trade and agricultural marketing activities. Chirwa and Zakeyo (2003) find that both international and domestic prices of major food and cash crops in Malawi have been falling, but with very little transmission mechanism between domestic and international prices.[15] The plight of the poor in the agricultural sector is also exacerbated by their lack of bargaining power over prices for their produce with powerful private traders in

---

[15] There is also evidence of a negative supply response in Malawi's agricultural sector. While both international and domestic prices have been declining, production figures reveal increases in output of major crops (Chirwa and Zakeyo, 2003).

an environment without state guaranteed prices. In a qualitative study Mvula et al. (2003) find evidence that most private traders behave as local discriminating monopsonists using business malpractices (such as cheating on quality and weighing measures), and do not trade in the most remote areas where infrastructure is a problem. Without regulation, this behaviour of private traders tends to undermine the effective prices that poor farmers would have obtained in a competitive market – an outcome that is expected following liberalisation. It is the poor who are mostly desperate and voiceless that are mostly affected by private traders' malpractices and lack of markets for their agricultural produce. Mvula et al. (2003) also find that state-guaranteed prices provide benchmark pricing such that private traders tend to offer better prices when the state marketing agency is actively involved in the marketing of agricultural produce at guaranteed prices.

5. Conclusions

This study provides evidence on the impact of changes in intermediate policy outcomes on poverty reduction in rural Malawi using household panel data between 1998 and 2002. The study attempts to link the intermediate policy outcome variables with the various macroeconomic policies that have been implemented by the government in the 1980s and 1990s. While it is difficult to isolate specific policies that could be attributed to changes in poverty status at household level, intermediate policy outcome variables such as output, prices, employment, wages and land are usually captured in household survey data and may provide useful links between macroeconomic policies and poverty reduction. Using initial conditions as control variables, we have analysed the relative importance of changes in land holdings and assets, changes in salaried employment and changes in selected agricultural prices in explaining the probability of escaping or falling into poverty in rural Malawi while controlling for the initial conditions in 1998. Changes in agricultural produce prices can be linked to trade policies, changes in employment can also be linked to trade or/and investment policies and changes in land holding provide inferences on the

consequences of a voluntary land redistribution policy.

The initial conditions are more important in explaining the probability of falling into poverty than in explaining the probability of escaping poverty. Only participation in salaried employment for the household head significantly increases the chance of escaping poverty among those that were poor in 1998. Smaller households, potentially due to low dependency, are more likely to escape poverty. Among the non-poor in 1998, male-headed households, young and older households, households with less educated heads, households with a low asset base and larger households were more likely to fall into poverty. The changes in policy-related or initial conditions variables explain changes in poverty more importantly among those that were poor in 1998 than for those that were non-poor in 1998. Among the non-poor in 1998, those that accumulated assets and grew groundnuts were less likely to fall into poverty in 2002. Among the poor in 1998, changes in land sizes and asset accumulation increased the probability of escaping poverty in 2002 while production of local maize and groundnuts by poor household reduced their probability of escaping poverty in 2002.

The variations in the effect of changes prices of agricultural produce by the poor and non-poor suggest that domestic trade liberalisation benefited the non-poor while the poor were the likely losers. On average, the poor experienced a decline in the price of groundnuts while the non-poor experienced a decrease in the real price.

The evidence in this study suggests that macroeconomic policies that promote employment opportunities in the rural areas for unskilled labour are more likely to reduce poverty in Malawi. This however, requires appropriate incentives that promote labour intensive economic activities in the rural areas and the development of road infrastructure and related services. Secondly, a land redistribution policy for the landless poor if properly implemented and complemented by provision of appropriate agricultural services is likely to promote growth in agricultural production and hence lead to poverty reduction.

References

Ahsan, A., C. Machinjili and M. M. Mkwezalamba (1999) The Impact of Adjustment Policy Reforms on Malawi's Manufacturing Sector, World Bank, Malawi Field Office.

Bigsten, A. and Shimeles, A. (2003) Prospects for 'Pro-poor' Growth in Africa, Paper presented at the WIDER Conference on "Inequality, Poverty and Human Well-Being", Helsinki, Finland, 30-31 May 2003

Bigsten, A., Kebede, B., Shimeles, A. and Taddesse, M. (2003) Growth and Poverty Reduction in Ethiopia: Evidence from Household Panel Surveys, **World Development, 31(1)**, 87-106

Chirwa, E.W. (1998) Fostering Private Food Marketing and Food Policies after Liberalisation in Sub-Saharan Africa - The Case of Malawi, in P. Seppala (ed.) **Liberalized and Neglected? Food Marketing Policies in Eastern Africa**, World Development Studies 12, Helsinki: UNU/WIDER.

Chirwa, E. W. (2002) Sources of Technical Efficiency among Smallholder Maize Farmers in Southern Malawi, Work in Progress Report presented at the Biannual Research Workshop organised by the African Economic Research Consortium, Durban, South Africa, December.

Chirwa, E. W. (2004a) Trade Policy and Poverty Reduction: Evidence from Malawi, Report of the ODI Trade Policy and Poverty Reduction Project (London: Overseas Development Institute).

Chirwa, E. W. (2004b) Access to Land, Growth and Poverty Reduction in Malawi, Report submitted to the North-South Institute, Canada.

Chirwa, E. W. (2004c) Fertilizer and Hybrid Seeds Adoption Among Smallholder Maize Farmers in Southern Malawi, **Development Southern Africa** (forthcoming)

Chirwa, E. W. and Mlachila, M. (2004) Financial Reforms and Interest Rate Spreads in the Commercial Banking System in Malawi, **IMF Staff Papers, 51 (1)**, 96-122.

Chirwa, E. W. and Zakeyo, C. (2003) Impact of Economic and Trade Policy Reforms on Food Security in Malawi, Report submitted to the Food and Agriculture Organisation (FAO) and the African Economic Research Consortium (AERC).

Dorward, A. (1999) Farm Size and Productivity in Malawian Smallholder Agriculture, **Journal of Development Studies, 35 (5)**, 141-161.

Ferreira, F. H. G. and Leite, P. G. (2003) Policy Options for Meeting the Millennium Development Goals in Brazil: Can Micro-Simulation Help? World Bank Policy Research Working Paper 2975 (Washington: World Bank)

GOM (Government of Malawi) (1971) **Statement of Development Policies 1971-1979**, Zomba: Government Printer

GOM (Government of Malawi) (1987) **Statement of Development Policies 1987-1996**, Zomba: Government Printer

GOM (Government of Malawi) (2000) Profile of Poverty in Malawi: Poverty Analysis of the Integrated Household Survey 1998 (Lilongwe: National Economic Council).

GOM (Government of Malawi) (2002a) Qualitative Impact Monitoring (QIM) of

Poverty Alleviation Policies and Programmes: Survey Findings (Lilongwe: National Economic Council).

GOM (Government of Malawi) (2002b) **Malawi Poverty Reduction Strategy Paper**, Lilongwe: Ministry of Finance and Economic Planning

GOM (Government of Malawi) (2004) Malawi Poverty Reduction Strategy 2002/2003 Annual Review Report (Lilongwe: Ministry of Economic Planning and Development).

Green, D. A. G. and Ng'ong'ola, D. H. (1993) Factors Affecting Fertilizer Adoption in Less Developed Countries: An Application of Multivariate Logistic Analysis in Malawi, **Journal of Agricultural Economics, 44 (1)**, 99-109.

Hoekman, B., C. Michalopoulos, M. Schiff and D. Tarr (2001) Trade Policy and Poverty Alleviation, World Bank Working Paper No. 2733, Washington DC: World Bank.

Mukherjee, S. and Benson, T. (2003) The Determinants of Poverty in Malawi, 1998, **World Development, 31(2)**, 339-358

Mulaga, G. and J. Weiss (1996) 'Trade Reform and Manufacturing Performance in Malawi 1970-1991', **World Development, 24 (7)**, 1267-1278

Mvula, P. M., Chirwa, E. W. and Kadzandira, J. (2003) 'Poverty and Social Impact Assessment in Malawi: Closure of ADMARC Markets', Draft Final Report submitted to Social Development Department, World Bank and Economic Section/PRSP Support, GTZ.

NEC (National Economic Council) (2000) Profile of Poverty in Malawi 1998: Poverty Analysis of the Malawi integrated Household Survey 1997-96 (Lilongwe: National Economic Council)

NEC (National Economic Council), NSO (National Statistical Office) and IFPRI (International Food Policy Research Institute) (2001) The Determinants of Poverty in Malawi, 1998: An Analysis of the Malawi Integrated Household Survey, 1997-98 (Lilongwe: National Economic Council)

Ravallion, M. and Datt, G. (2002) Why Has Economic Growth Been More Pro-Poor in Some States of India Than Others? **Journal of Development Economics, 68(2)**, 381-400

World Bank (1989) Malawi: Industrial Sector Memorandum, Washington, D.C.: World Bank

World Bank (2001) **World Development Report 2000/2001: Attacking Poverty**, New York: Oxford University Press

World Bank (2003) Malawi Country Economic Memorandum: Policies for Accelerating Growth, Washington, D.C: World Bank

Zeller, M., Diagne, A. and Mataya, C. (1998) Market Access by Smallholder Farmers in Malawi: Implications for Technology Adoption, Agricultural Productivity and Crop Income, **Agricultural Economics, 19**, 219-229.