

Effects of Economic and Trade Policy Reforms on Food Security in Malawi *

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Abstract: Since 1981 Malawi has implemented several economic and trade policy reforms under the structural adjustment programmes following an economic crisis between 1979 and 1980. Most of the policies targeted the agricultural sector including deregulation of agricultural marketing activities, removal of fertilizer subsidies, devaluation of currency, liberalisation of agricultural prices and liberalisation of special crop production. However, despite the long experience of economic reforms there is no evidence to suggest that household food security has improved during the period of reforms.

1. Introduction

Malawi is one of the poorest countries in the world with per capita gross domestic product of \$190 and 65 percent of the population living below the poverty line. The agricultural sector accounts for more than a third of gross domestic product, more than 90 percent of export earnings and is the main source of livelihoods for 71 percent of the rural population. Malawi does not have mineral resources that can be economically exploited and its resource endowment is agricultural land and the surplus labour. The development strategy has therefore focused on improving productivity in the agricultural sector in order to attain self-sufficiency in food production while at the same time enabling the rural population to generate cash incomes to support their daily needs.

The performance of the agricultural sector and the economy was remarkable in the post-independence period until 1979.¹ The economy grew at an average rate of 6 percent per year. However, the good performance of the economy was interrupted in 1979 and 1980 when negative economic growth rates were registered in 1980 and 1981 following a crisis that was triggered by the oil shock of 1979, the international transport bottleneck due to the civil war in Mozambique and the structural rigidities of the economy. This economic crisis led to the adoption of economic reform programmes under the sponsorship of the International Monetary Fund and World Bank through a series of structural adjustment loans since 1981. The reforms were slow initially involving periodic adjustment in output and input prices. Major economic reforms, however, took place

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¹ During this period a mixed economy development approach was adopted in which the government intervened in economic activities while allowing the private sector to operate. There was state-led and estate-led agricultural development alongside smallholder farmer activities, with the marketing of smallholder produce controlled by the state marketing agency.

between 1987 and the first quarter of 1995. Most of the policies targeted the agricultural sector notably the deregulation of agricultural marketing activities in 1987, removal of fertilizer subsidies between 1984 and 1992, deregulation of special crops production by smallholder farmers by 1992, devaluation of the Malawi Kwacha and its eventual floatation in 1994 and the liberalisation of prices from the 1995/96 season. These policies were reinforced by other economic reforms such as removal of trade barriers, liberalisation of the financial sector and interest rates and implementation of trade agreements. By the first quarter of 1995 most of the policies were implemented.

This study investigates the impact of trade and economic policies on agricultural development and food security at national and household levels in Malawi. The main objective of the study is to assess the impact of macro economic and agricultural sector reforms on the performance of the agricultural sector, food production, national and household food security and vulnerability in Malawi. The paper is organized as follows. In the next section, we outline the various economic and trade policy reforms that have been implemented in Malawi. Section 3 assesses the impact of various reforms on agricultural production and trade flows. Section 4 evaluates the impact of reforms on food security of rural households. Finally, in section 5 we provide concluding remarks.

2. Economic and Trade Policy Reforms in Malawi

Economic and trade policy reforms in Malawi began in 1981 following the economic crisis that led to the adoption of structural adjustment programs supported by loans from the World Bank and International Monetary Fund. Due to the importance of the agricultural sector in the livelihood systems of many Malawians the emphasis is on policies that would stimulate the growth and development of the agricultural sector. The objectives of the reforms included diversification of the export base, encouraging efficient import substitution, ensuring appropriate price and income policy, expanding the role of the private sector in the marketing of smallholder crops, increasing efficiency and improving incomes of smallholder farmers, increasing efficiency of land use and improving the macroeconomic environment. Various policies have been implemented to achieve these objectives with direct and indirect impact on agricultural development and food security.² Table A1 presents a summary and sequence of the economic policies that have been implemented in Malawi. These policies can be grouped into fiscal policies, monetary policies, trade policies, pricing policies and institutional reforms.

2.1 Fiscal Policies

Three main fiscal policy measures have been implemented under adjustment programs with direct impact on agricultural development and food security. First, there have been increases in the recurrent budget allocation to pro-poor sectors such as agriculture and other key economic and social sectors between 1982 and 1995. The non-wage budgetary allocations to the agricultural sector increased by 22 percent in 1998/99. Secondly, the government implemented a phased removal of subsidies on fertilizers with an increase in the price of fertilizer by 21 percent in the 1983/4 season. However, due to a reduction in the application of fertilizers by smallholder farmers, the removal of subsidies on fertilizer in the 1986/7 season was postponed to the 1989/90 season. The

² Macroeconomic policies that have been pursued in Malawi have largely been instigated by the World Bank and the International Monetary Fund as conditionalities to loans. Since 1981 Malawi has had eight structural adjustment loans (SALs) to support her structural adjustment measures, three of which were SALs and five were sectoral adjustment loans.

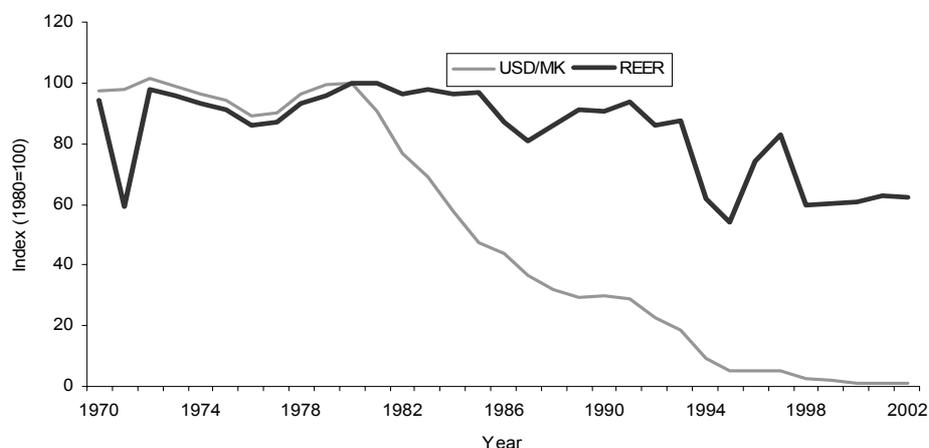
phased removal of fertilizer subsidy continued in the 1990/91 season, following the deregulation of fertilizer marketing by private traders.

Thirdly, the government has also been pursuing a phased privatization programme that is supposed to reduce the pressure of state-owned enterprises on public finance (Chirwa, 2000). However, the reduction in expenditures, removal of subsidies and privatisation of state-owned enterprises have not brought a sustainable budget deficit with fiscal budget deficit as a ratio of gross domestic product deteriorating between 1978 and 1981. The implementation of economic reforms led to a reduction in the budget deficit and an upward trend can be observed between 1986 and 1993. However, this reduction in the fiscal deficit was short-lived and since 1994 the fiscal imbalance has worsened. The deteriorating fiscal balance position in the post-1993 period occurred at a time when the government introduced a cash budgeting system that was expected to control over-expenditure by government agencies.

2.2 Monetary Policies

Monetary policies have perhaps been the most active policy instruments during the period of structural adjustment. The government pursued an active exchange rate policy through periodic devaluation of the Malawi Kwacha since 1982 until the end of 1993. Over the period, 1983-93, the Malawi Kwacha was devalued by more than 300 percent. In 1991, the system of foreign exchange allocation by the Reserve Bank was abolished and the foreign exchange market was therefore completely liberalized. In February 1994, the Malawi Kwacha was floated on the foreign exchange market. The nominal exchange rate (US dollar per Malawi Kwacha) shows some stability prior to 1980, a reflection of the fixed exchange rate regime that existed before liberalisation. The effects of a series of devaluation are revealed by the continuous depreciation of the Malawi Kwacha since 1981 (Figure 1). However, the devaluations and depreciation of the Malawi Kwacha do not seem to have consistent impact on the movements of the real effective exchange rate, except after 1998 where there is stability. Real depreciation occurred between 1985 and 1987, 1990 and 1994. Otherwise, there have been some episodes of real appreciation. The World Bank (2003) attributes the appreciation of the Malawi Kwacha to the high levels of inflation that averaged about 35 percent per year between 1995 and 2000.

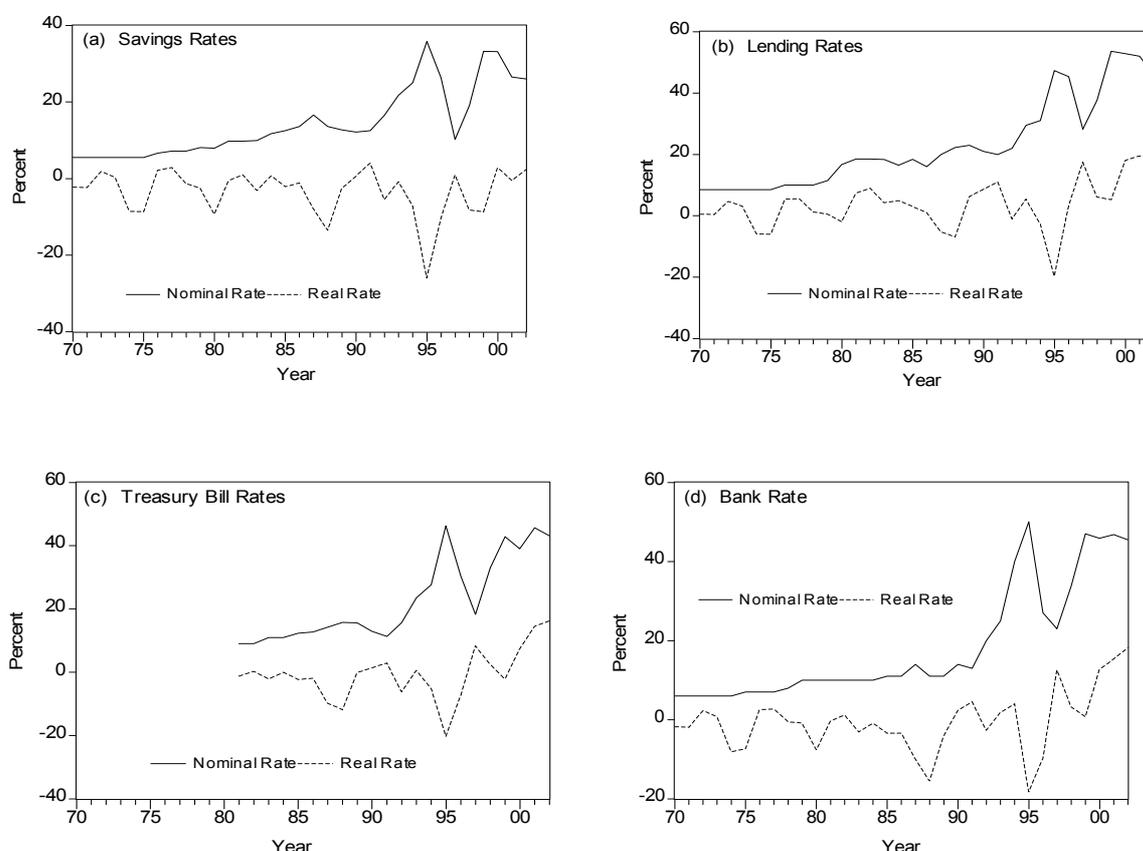
Figure 1 Nominal and Real Effective Exchange Rate Movements, 1970 - 2002



The other area of reform relating to monetary policies that has been of focus since 1982 is the reforms in the domestic financial sector. In the initial period of structural adjustment programmes, monetary policy focused on periodic adjustment of interest rates between 1982 and 1986. However, the government eventually liberalized lending rates in 1987 and liberalized interest rates on deposits in 1988, and removed preferential lending and interest rates to the agricultural sector in 1990. In addition, the monetary authorities eased credit ceilings and credit rationing in 1989, and completely removed direct bank credit controls in 1995. The implementation of interest rate reforms is reflected in the upward trend of nominal interest rates on savings and loans from early 1980s but substantially in the early 1990s (Figure 2 (a) and (b)). Although nominal interest rates have increased, real interest rates on savings have largely been negative due to the high levels of inflation during the adjustment and post-adjustment periods. On the contrary, real lending interest rates have been positive in the adjustment period.

The monetary authorities also actively started using open market operations as instruments of monetary policy since the 1990s, through the auctioning of treasury bills and Reserve Bank bills. The process substantially influenced the upward trends in interest rates in Malawi, as the resulting average treasury bills rate was one of the factors in determining the bank rate. The effective implementation of such policy measures is manifested in the upward trend in the treasury bills and bank rate from 1991 (Figure 2 (c) and (d)). However, similar to the behaviour of other rates, there seem to be no real increase in the treasury bill and bank rates during and after adjustment.

Figure 2 Evolution of Interest Rates, 1970 - 2002



The interest rate reforms were followed by the deregulation of entry into the commercial banking industry in 1989 leading to eventual transformation of existing non-bank financial institutions to commercial banks and entry of new banks in the financial sector. As a result, the number of commercial banks has increased from two to more than five banks. Although, the number of banks has increased following deregulation of entry, the structure of the banking sector remains highly oligopolistic and the spread between lending and deposit interest rate has widened during and after adjustment, partly due to monopoly power, high bank discount rate and high inflation (Mlachila and Chirwa, 2002).

2.3 Trade Policies

Trade reforms have also been central to macroeconomic policy in Malawi since 1981. The reform measures were aimed at removing constraints to domestic and international trade and at providing proper incentives for private market operations. Domestic trade policies included deregulation of agricultural produce and input marketing, and liberalisation of cash crop production while international trade policies included the introduction of export incentives, elimination of export and import licensing and reduction in tariffs and surtax rates.

The main area of domestic trade reform was the deregulation of agricultural produce and input marketing activities, which were prior to 1987 dominated and in some crop cases monopolized by the state marketing institution, the Agricultural Development and Marketing Corporation (ADMARC). The deregulation of agricultural market was initiated in 1987 through enactment of the Agriculture (General Produce) Act of 1987. The legislation essentially eliminated ADMARC's quasi monopoly power in smallholder agricultural marketing in the domestic and international market by allowing private traders to operate under regulation through the licensing process. The number of private traders officially registered with the authorities increased, although most of the private traders were small-scale operating in geographical markets than at national scale as ADMARC. Some studies reveal that most private traders faced problems of transportation, storage, pricing, grading, crop procurement, marketing and finance; raising questions about their effectiveness in providing the necessary competition to ADMARC (Mkwezalamba, 1989; Harriss and Crow, 1992). In 1991, the government also liberalised the production of burley tobacco by smallholder farmers followed by the repeal of the Special Crops Act in 1995. The latter removed restrictions that prevented smallholder farmers from producing and marketing of high value crops such as tobacco, coffee, tea and sugar. Since 1996 further emphasis was placed on deregulation of agricultural markets, culminating into abolishing the system of requiring private traders to obtain a license to conduct trade in the rural areas in 1996. Similarly, the marketing of agricultural inputs such as fertilizers was also liberalized commencing in 1990. In 1996, the government removed the licensing and registration procedures for private traders in seeds and fertilizer marketing.

International trade policies have concentrated on removing the barriers to international trade. In addition to the active exchange rate policy since 1982, government also reduced the scope of import and export licensing in 1989. The Reserve Bank of Malawi removed the requirement for prior allocation of foreign exchange for 65 percent of all imports in 1989 and in 1991 completely liberalised the foreign exchange allocation except for a narrow and temporary negative list covering certain luxury items. In 1994, the negative list of imported commodities was abolished. In addition, under the Export Incentives Act and Investment Promotion Act in 1992, government provided for

additional tax incentives for the exportation of non-traditional agricultural products. In 1997, all licensing requirements on imports and exports were abolished except for items related to health, security, and environmental considerations. The maximum tariff on imports was reduced from 70 percent in 1988 to 25 percent in 1998. Since 1989, there has been a phased reduction in tariff rates and base surtax rates.

Other major trade policy issues relate to the implementation of policies under trade agreements since 1990. The bilateral trade agreements include the Malawi-South Africa non-reciprocal free trade agreement since 1990 and the Malawi-Zimbabwe reciprocal trade agreement since 1995. The government implemented the Common Market for Eastern and Southern Africa (COMESA) free trade area regional agreement and the Southern African Development Community (SADC) Trade Protocol in 2000 and 200, respectively. These regional agreements introduced duty free access of products on a reciprocal basis among member states. However, under the SADC protocol, there were import restrictions on imported livestock commodities such as eggs and chicken meat under the protocol premise on infant industries; hence protecting the livestock industry. Malawi is also a member of the World Trade Organization (WTO) since 1995, the European Union – African Caribbean and Pacific (EU-ACP) countries Cotonou agreement, the European Union Everything but Arms (EBA) non-reciprocal multilateral agreement and the African Growth Opportunity Act non-reciprocal multilateral agreement with the United States of America.

2.4 Price Policy

Prior to market reforms, the government set prices for agricultural produce and inputs and other selected industrial commodities. The pricing reforms commenced with periodic adjustments to the pan-territorial and pan-seasonal prices for agricultural products particularly maize between 1982 and 1986. In 1982, the government adopted the parity pricing approach and the producer price of maize was consequently increased by 68 percent. The pricing approach led to annual adjustments in the price of maize in the 1980s. As Harrigan (1988) notes, considerable price increases for a majority of smallholder export crops were announced in 1983/4 and 1984/5 growing seasons such that by 1985/6 prices were close to parity levels. However, by 1988, prices of most crops were liberalized with the state marketing agency acting as a buyer of last resort at minimum guaranteed pan-territorial and pan-seasonal prices. Private traders were therefore free to determine their own prices for purchase of crops from smallholder farmers, and by 1995 prices of all other crops, except for maize, were fully liberalized and ADMARC was given flexibility in determining the prices of other crops (Chirwa, 1998).

While prices of all other products were liberalized, maize was still under limited pricing control as a food security policy. ADMARC was free to determine the producer price of maize within a fixed band while the consumer price of maize remained pan-territorial and pan-seasonal. However, due to increased marketing of maize by private traders, it had become rather difficult for ADMARC to defend the price band, and consequently the policy was abandoned in 2000 and the price of maize significantly increased. In addition to agricultural produce pricing policies, the government implemented a phased programme of decontrolling of prices for industrial commodities including prices of inputs to the agricultural sector.

2.5 Institutional Reforms

Most institutional reforms that have taken place in Malawi since 1981 have been necessitated by the desire to encourage private sector development. Institutional reforms have focused on the reduction of government involvement in economic activities through the privatization programme, abolishing or changing legislation that impeded private sector development and introduction of new legislation aimed at facilitating private sector development. Five important institutional reforms with direct impact on the agricultural sector have been initiated since 1981. First, within the privatization policy, the state marketing agency has undergone various reforms with a view to commercialisation. This has led to the closure of rural markets that were deemed unprofitable, which have in turn created problems of accessibility to produce and input markets by smallholder farmers (Mvula et al., 2003). Secondly, from the legislative point of view the government deregulated the marketing of smallholder agricultural produce and inputs in 1987 and repealed the Special Crops Act in 1995 – this afforded opportunities to smallholder farmers to grow high value crops like barley tobacco.

Thirdly, the Smallholder Agriculture Credit Administration (SACA) that was the only and main supplier of agricultural input credit since independence collapsed in 1992 and it was eventually replaced by Malawi Rural Finance Company (MRFC) in 1995 that provide credit to smallholder farmers, particularly to tobacco farmers, on commercial basis. While the drought in the 1991/92 season had contributed to difficulties in repayment, the political changes that were taking place during the transition period to a multiparty democracy eventually led to the collapse of SACA (Msukwa et al, 1994; Buckley, 1996).³ Although other micro finance institutions have mushroomed in the country providing micro loans to micro and small business entrepreneurs although their outreach remains highly constrained by the financial, fiscal and institutional capabilities, and mainly focus on financing off-farm business activities.

Fourthly, the smallholder farmer's cooperative movement started in 1998 through the establishment of the National Association of Smallholder Farmers of Malawi (NASFAM), although membership to these co-operatives remains limited to a few farmers. NASFAM is the only institution actively involved in the creation of co-operatives among smallholder farmers. It is a relatively new institution and its coverage remains limited and as a membership organisation it tends to serve medium scale farmers, with more than 1.5 hectare of landholdings.

Finally, in the late 1990s, the government with the support of bilateral donors introduced a series of safety net programmes for resource poor smallholder farmers to minimize the cost of adjustment. These agricultural based safety net programmes include a 'starter pack' program which provided free inputs to resource poor farmers from 1998/99 – 1999/2000; the Agricultural Productivity Improvement Programme (APIP) funded by the European Union which provides inputs on credit to resource poor farmers in 1998; and the Targeted Input Programme funded by the Department for International Development in 2000 which provides free inputs to resource poor farmers including cereals seeds, legumes seeds and fertilizer. In the 2001/02 season, the number of beneficiaries of APIP was reduced to 41,800 from 160,000 in 2000/01 season due to the high default

³ Msukwa et al. (1994) note that during political campaigns in the transition to multiparty democracy, opposition parties sent conflicting messages to farmers about the status of SACA credit to serve their political gains. For instance, in some political meetings farmers were told that those loans were supposed to be hand-outs and that there was no justification for farmers to pay back the loans.

rate among smallholder farmers (NEC, 2002). In 1996, under the Malawi Social Action Fund (MASAF) project the government started implementing the public works programme (cash-for-work) in areas that were food insecure throughout the country as a safety net.

3. Impact of Reforms on Agricultural Production and Trade

Several food and cash crops are cultivated in Malawi. Maize is the main staple food grown by more than 90 percent of smallholder farmers and as Smale (1995) puts it 'maize is life'. The other important food crops include groundnuts, cassava, beans, rice, sorghum, millet, cassava and sweet potatoes. Most of these food crops are highly tradable, except for cassava which is non-tradable. NEC (2002) notes that although improvements have been made in the production of other food crops, their impact on food security is minimal especially in the rural areas where people recognize maize as the only food crop. The main cash crops grown by smallholder farmers in Malawi include cotton, tobacco, soya beans, sunflower and pulses. Tobacco is grown by 65.1 percent of the households that indicated deriving incomes from cash crops while soya beans are grown by 17.4 percent of households (Chirwa and Zakeyo, 2003).⁴

Table 1 presents a summary of major policies affecting the crops grown by smallholder farmers. Policies such as devaluation of currency and floatation of the Malawi Kwacha in 1994 mainly affected the relative prices of tradables. The repeal of the Special Crops Act in 1995 affected all the agricultural crops, except for maize over which the government maintained some control over prices ADMARC purchased and sold smallholder maize. Some of the policies were specific to crops. For example, the liberalisation of burley tobacco production in 1991 and 1996 and the temporary export levy between 1995 and 1998. Similarly, an explicit pricing policy was imposed on maize and changes occurred in 1996 when government introduced a price band on the producer price which was eventually eliminated in 2000.

⁴ The analysis of the impact of reforms on food security focuses on maize, groundnuts, rice, beans/soya beans (pulses), tobacco and cotton. The selection of these seven products is based on several factors.

Table 1 Summary of Major Policies Affecting Specific Crops

Year	Policy Actions	Crops Directly Affected
1981-1986	<ul style="list-style-type: none"> ○ Annual adjustments in smallholder produce prices ○ Annual increases in interest rates ○ Periodic devaluation of the Malawi Kwacha 	<ul style="list-style-type: none"> ○ All crops ○ All crops ○ All crops
1981-1992	<ul style="list-style-type: none"> ○ Periodic devaluation of the Malawi Kwacha 	<ul style="list-style-type: none"> ○ All crops, except cassava the non-tradable crop
1987-1988	<ul style="list-style-type: none"> ○ Liberalisation of smallholder agricultural produce marketing ○ Liberalisation of interest rates 	<ul style="list-style-type: none"> ○ All crops, except tobacco and cotton. ○ All crops
1989-1990	<ul style="list-style-type: none"> ○ Reduction in the scope of export licensing in 1989 ○ Preferential lending to agricultural sector abandoned in 1990 	<ul style="list-style-type: none"> ○ All crops except maize and cassava ○ All crops
1991	<ul style="list-style-type: none"> ○ Liberalisation of marketing of agricultural inputs. ○ Liberalisation of burley tobacco production and introduction of two payment system for tobacco. ○ Removal of fertilizer subsidies. 	<ul style="list-style-type: none"> ○ All crops ○ Tobacco ○ All crops
1994	<ul style="list-style-type: none"> ○ Floation of the Malawi Kwacha and liberalisation of exchange rate market. 	<ul style="list-style-type: none"> ○ All crops
1995	<ul style="list-style-type: none"> ○ Repeal of Special Crops Act and liberalisation of agricultural produce prices ○ Temporary export levy (10 percent) on tobacco 	<ul style="list-style-type: none"> ○ All crops except prices for maize ○ Tobacco
1996	<ul style="list-style-type: none"> ○ Introduction of a producer price band for maize ○ Lifting remaining constraints on burley tobacco production ○ Export levy on tobacco reduced to 4 percent. 	<ul style="list-style-type: none"> ○ Maize ○ Tobacco ○ Tobacco
1997	<ul style="list-style-type: none"> ○ Removal of all import and export licensing requirement. ○ Introduction of 'starter pack' free input distribution for food insecure households 	<ul style="list-style-type: none"> ○ All crops ○ Maize
1998	<ul style="list-style-type: none"> ○ Devaluation of Malawi Kwacha ○ Elimination of the export levy 	<ul style="list-style-type: none"> ○ All crops, except cassava ○ Tobacco
1999	<ul style="list-style-type: none"> ○ Reduction of maximum tariff rate to 25 percent 	<ul style="list-style-type: none"> ○ All crops, except cassava the non-tradable
2000	<ul style="list-style-type: none"> ○ Elimination of the price band for maize ○ Implementation of the Agricultural Productivity Improvement Programme 	<ul style="list-style-type: none"> ○ Maize ○ All crops, mainly food crops

Source: Appendix Table A1

The immediate impact of changes in trade policies is the change in relative prices that in turn influences changes in production levels of food and cash crops on one hand, and relative production of tradable and non-tradable commodities in the agricultural sector. It is important therefore to assess the effect of trade reforms on the behaviour of prices for tradable agricultural products.

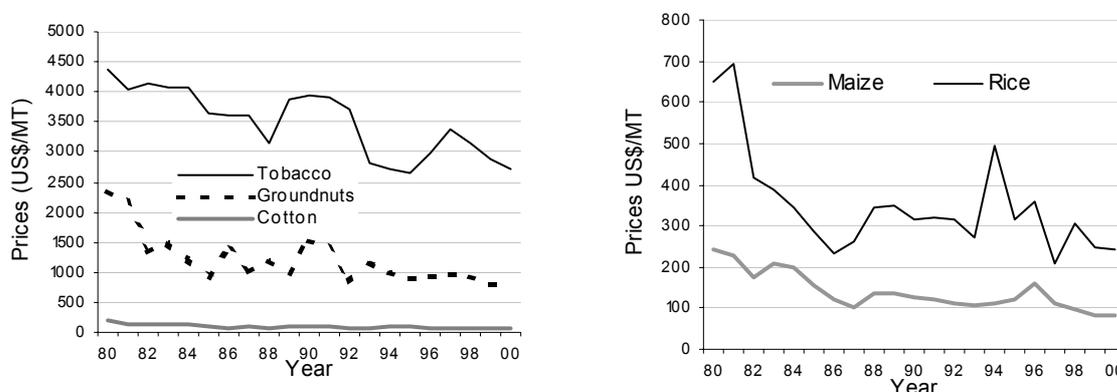
3.1 Changes in Prices and Price Linkages

Economic reforms also imply that economic agents have complete information about opportunities that are signalled through the working of a price system. With respect to agricultural development, the case for marketing liberalisation and commodity price liberalisation has been made on the basis that such policies benefit the producers through the price transmission mechanism between domestic and international prices on one hand, and among spatially separated domestic market on the other hand. Nonetheless, the price transmission mechanism will be effective if there are no structural bottlenecks in the economy such as poor communication, poor transport infrastructure

and network and inefficient financial markets, all of which raise transaction costs.

The behaviour of real international prices for selected commodities reveals a general decline in prices as shown in Figure 3.⁵ Tobacco prices steadily declined between 1980 and 1988, but increased between 1989 and 1991. Similarly, the world price for groundnuts steeply declined between 1980 and 1985 with erratic behaviour thereafter. However, world cotton prices have remained relatively stable over time. The world maize price fell steadily between 1980 and 2000. On the other hand, the world rice price fell substantially during the 1980s, and the price behaviour become more erratic since the late 1980s. The declining trend in the export prices for Malawi's main export products has also been observed elsewhere. The World Bank (2003) notes that export earnings have declined by almost 20 percent since 1997 primarily due to a decline in export prices.

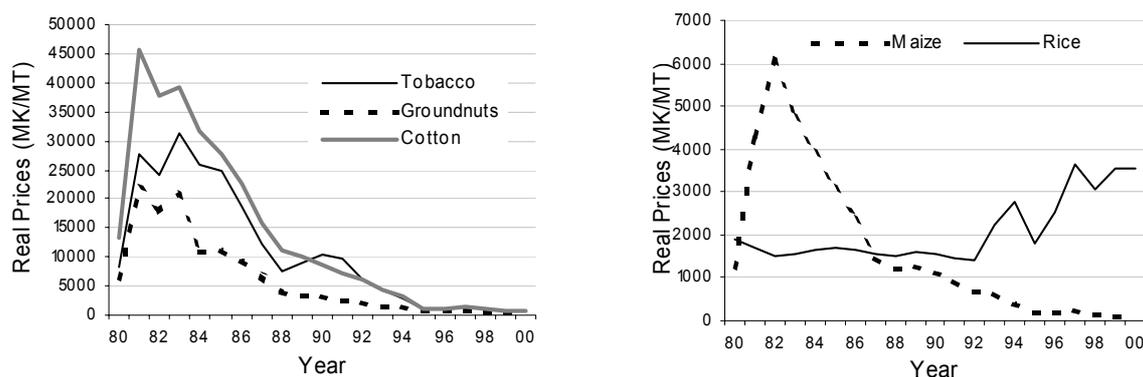
Figure 3 Trends in International Prices, 1970 - 2000



The behaviour of real domestic producer prices in Figure 4 is similar to the behaviour of international prices, particularly the sustained decrease in the prices since the early-1980s although in the case of real domestic producer prices the declines are substantial and sustained. This is with the exception of rice prices which have been stable in the 1980s but with an increasing trend in the 1990s. The behaviour of real world prices and real domestic producer prices suggests a weak transmission of prices from the world markets to the domestic markets. For instance, while international rice prices were declining in the 1990s, domestic prices were increasing and while cotton world prices were stable, domestic prices were substantially falling.

⁵ The international prices for pulses (beans) were incomplete and were therefore not included in the price analysis. Cassava is a non-tradable commodity and it is also excluded in the international price analysis.

Figure 4 Trends in Domestic Real Prices, 1970 - 2000



The weak link between international prices and domestic prices is also revealed in the econometric analysis using a simple log-linear regression model of the form:

$$P_{it} = \beta_{i0} + \beta_{i1}FP_{it} + \beta_{i2}REER_{it} + \beta_{i3}DM_{it} + \beta_{i6}t + \varepsilon_{it} \quad (1)$$

where for crop i and time t , P is the real domestic price, FP is the real international price, $REER$ is the real effective exchange rate index (Malawi Kwacha per US dollar), DM is the dummy variable equal to 1 after 1994 capturing the effects of trade liberalisation not explicitly modelled and t is the time trend. A positive coefficient of FP would indicate that increases in the international price are reflected in increases in domestic price. Table 2 presents the results of the price relationships.

Table 2 Domestic and International Price Linkages for Major Agricultural Crops
(Dependent variable: Real Domestic Price)

Variables	Tobacco		Groundnuts		Cotton		Maize		Rice	
	β	t -ratio	β	t -ratio	β	t -ratio	β	t -ratio	β	t -ratio
constant	1.965	0.47	9.593	3.40 ^a	8.979	1.04	12.04	4.79 ^a	7.542	3.73 ^a
FP	1.080	2.55 ^b	-0.037	-0.15	0.007	0.05	-0.307	-1.25	-0.079	-0.50
$REER$	-0.552	-1.70	-0.431	-1.02	-0.683	-3.21 ^a	-1.017	-3.39 ^a	-0.420	-1.43
DM	-0.237	-1.35	-0.096	-0.37	-0.309	-2.27 ^b	-0.032	-0.17	-0.513	-2.71 ^a
t	0.054	2.30 ^b	0.050	0.72	0.136	0.57	0.051	0.74	0.162	2.10 ^b
Rho	0.589	2.36 ^b	0.788	4.52 ^a	0.926	7.01 ^a	0.845	5.17 ^a	0.853	8.30 ^a
Adj. R^2	0.53		0.39		0.72		0.49		0.81	
DW	1.89		2.66		2.28		1.78		1.25	
N	20		20		20		20		20	

Notes: The t -ratios are based on White heteroskedastic-consistent standard errors. Rho is the first-order autocorrelation coefficient. Superscripts a , b and c denote significance at 1%, 5% and 10% levels, respectively.

The overall explanatory power of models using the adjusted R^2 ranges from 39 percent to 81 percent. The expected positive and statistically significant link between real domestic price and real international price is only evident for tobacco and cotton but the relationship is statistically significant only for tobacco. Otherwise, the relationship between world and domestic prices for all other crops is negative but statistically insignificant. The coefficient of the real effective exchange rate is consistently negative but is only statistically significant for cotton and maize, suggesting that real depreciation negatively affected the real domestic price. The coefficient of the dummy variable that

captures the effects of other policy changes is consistently negative, but only statistically significant for groundnuts and rice.

The other effect of agricultural reforms is the improvement of the spatial market integration within the domestic economy. This issue is explored using the cointegration test which establishes the existence of long-run relationships between prices in different markets for the same produce in the domestic market. These tests enable us to gauge the efficiency of the marketing system in price transmission – that is whether markets are integrated and if they are whether prices are efficiently transmitted.⁶ There have been two main policy developments during the period of structural reforms with implications on the integration of domestic markets: liberalisation of marketing activities in 1987 and price liberalisation. These policies are expected to have improved the degree of market integration and price transmission in spatial agricultural markets. Deregulation of agricultural marketing was implemented in 1987 and the pricing reforms for agricultural products except for maize were finalised in early 1995. Chirwa (2001) investigated the issue of domestic market integration using eight spatial markets served by private traders across the country. The results of the cointegration test in the pre- and post-reform period are summarised in Table 3.⁷ The results show that although long-run relationships exist in both regimes the extent of market integration is lower in the period before price liberalization than observed in the period after price liberalization.

Table 3 Extent of Domestic Market Integration of Eight Selected Markets, 1989 – 1998
(Number of Cointegrating Relationships)

Period	Maize	Rice	Pulses (Beans)	Groundnuts
Before Price Reform (1989:01 - 1995:03)	1	3	2	2
After Price Reform (1995:04 -1998:12)	2	3	3	5

Source: Chirwa (2001)

The improvement in the integration of markets after price liberalization is significantly evident in the groundnuts price series. However, there were no significant changes in the number of cointegrating vectors following price liberalization in maize, rice and beans price series. The results suggest that market integration is higher in products in which there has been complete price liberalization (groundnuts, beans and rice), and the maize fixed price band that existed up to 2000 may have constrained the activities of private traders. The weak integration of markets can also be explained by the poor infrastructure that exists in Malawi, particularly in the rural areas. Mkwezalamba (1989) and Harris and Crow (1992) note that private traders faced problems of transport infrastructure, high transport costs, storage facilities, slow access to information, marketing skills and finance to effectively replace the state marketing agency. These factors have not changed significantly over time and they remain a constraint on effective private sector participation in the marketing of agricultural produce. In addition to these problems, most private traders are small buyers that operate within the local geographical area

⁶ There exist a large body of literature on market integration and the price transmission mechanism. For further exposition see among others Dercon (1995), Ismel et al. (1998), Bassolet and Lutz (1999) and Asche et al (1999).

⁷ The test was performed on the natural logarithm of monthly nominal prices. We first tested the existence of unit roots in the data and all the series were integrated of order 1 (see Chirwa, 2001). The test was conducted using the Johansen Cointegration Test. It should be noted, however, that all these markets are easily accessible and none of the markets are in remote areas where most farming households live.

without the capacity to store products to take advantage of inter-seasonal arbitrage (Mvula et al. 2003; Fafchamps and Gabre-Madhin, 2001).

3.2 Changes in Agricultural Production

Agricultural production estimates show positive growth in the production of key crops, particularly in the 1990s, with area under cultivation rather than productivity being the main driving force.⁸ The area under groundnuts cultivation generally fell substantially between 1980 and 1996, while productivity remained high though swinging around the 1970 level (Chirwa and Zakeyo, 2003). For the main export crop – tobacco, production grew by 5.7 percent and productivity fell by nearly 1 percent while area under cultivation increased by 6.6 percent during the 1995-01 period. This period was also characterised by substantial crash in the real producer price for groundnuts in the domestic market, but production increased. The trends in output for most crops is somewhat surprising given that real domestic producer prices and international prices have falling in the period after reforms while output for many tradable commodities has been increasing.⁹

The negative supply response is further revealed in a log-linear regression analysis of individual crops' output on real prices, area under cultivation and real effective exchange rate using the following supply function¹⁰:

$$Q_{it} = \beta_{i0} + \beta_{i1}P_{i,t-1} + \beta_{i2}Q_{i,t-1} + \beta_{i3}REER_{i,t-1} + \beta_{i4}A_{it} + \beta_{i5}DP_{i,t-1} + \beta_{i6}t + \varepsilon_{it} \quad (2)$$

where for crop i and time t , Q is the quantity of output (in millions of tonnes), P is the real domestic price, $REER$ is the real effective exchange rate (Malawi Kwacha per US dollar), A is the total area under cultivation (in thousands of hectares), DP is the multiplicative dummy variable of real domestic prices from 1995 when prices were liberalised (real domestic prices multiply by the dummy that is equal to 1 after 1994) and t is the time trend included to capture technology. The short-run supply response is captured by the coefficient of P , the supply elasticity which is expected to be positive. All the variables are in logarithmic form and results are presented in Table 4. The explanatory power of the model is quite high, with the adjusted R^2 ranging from 54 percent to 93 percent.

⁸ Agricultural production estimates in Malawi are highly suspect; they usually overstate the food production and area under cultivation in a land-constrained economy (World Bank, 2003).

⁹ Unless economic agents are expanding production to maintain the income levels, this negative relationship between prices and supply may be purely a reflection of the poor quality of production data as noted by World Bank (2003).

¹⁰ See Danielson (2002) and Lamb (2000) for similar specifications.

Table 4 Supply Response of Major Agricultural Crops

Variables	Tobacco		Groundnuts		Cotton		Maize		Rice	
	β	<i>t</i> -ratio	β	<i>t</i> -ratio	β	<i>t</i> -ratio	β	<i>t</i> -ratio	β	<i>t</i> -ratio
<i>constant</i>	9.136	1.34	-3.751	-0.68	-17.73	-3.58 ^a	-4.845	-0.96	-0.449	-0.24
Q_{t-1}	0.170	0.64	-0.265	-1.17	0.080	0.79	-0.357	-1.14	0.043	0.33
P_{t-1}	-0.694	-1.64	0.520	1.07	0.946	2.89 ^a	0.514	2.22 ^b	-0.043	-0.24
A_t	0.868	2.78 ^a	1.336	4.24 ^a	1.207	4.26 ^a	0.713	0.93	1.365	7.91 ^a
$REER_{t-1}$	-0.848	-0.99	-0.374	-0.59	1.850	3.41 ^a	1.484	3.43 ^a	-0.007	-0.03
DP_{t-1}	-0.019	-1.06	-0.035	-1.19	0.005	0.18	0.000	0.04	0.010	0.54
<i>t</i>	0.037	1.59	0.027	2.58 ^b	-0.009	-0.42	-0.019	-1.37	-0.010	-1.16
<i>Rho</i>	-	-	-0.359	-1.28	-0.465	-1.33	-0.450	-1.78	-	-
Adj. R^2	0.66		0.86		0.67		0.54		0.820	
DW	2.18		2.20		2.37		2.29		1.62	
N	20		20		20		20		20	

Notes: The *t*-ratios are based on White heteroskedastic-consistent standard errors. *Rho* is the first-order autocorrelation coefficient. Superscripts *a*, *b* and *c* denote significance at 1%, 5% and 10% levels, respectively.

The supply response is generally weak, with negative supply responses in tobacco and rice. Only cotton and maize reacted positively to the price incentives. The negative supply response is further reinforced by the insignificance and negative coefficients of the interaction dummy variable. In all the models, production increases due to increase in area under cultivation and in most cases the elasticity is around unity. The real depreciation of the Malawi Kwacha (an increase in REER) provided incentives for increased production only in cotton and maize production. These results are somewhat surprising given the earlier observation that depreciation negatively affected the domestic price development.¹¹

3.3 Changes in Agricultural Trade

The agricultural sector contributes more than 90 percent of foreign exchange earnings but the export basket is dominated by the traditional exports of tobacco, tea and sugar (Table 5). Tobacco is the major export crop in Malawi accounting for 61.4 percent of total exports in the 1995-01 period from 47.7 percent in the 1970s. Tea is the second foreign exchange earner but its significance has been declining from 21.2 percent in the 1970s to 8.6 percent in the late 1990s. With the liberalisation of burley tobacco production and marketing, smallholder farmers account for about 70 percent of the total national output. Tea and sugar remain export crops that are largely grown by estates and domestic and multinational corporations, while groundnuts are solely grown by smallholder farmers.

¹¹ However, cautions must be exercised in interpreting the results due to the small sample sizes.

Table 5 Composition of Exports by Main Commodity, 1970 – 2001 (Percent)

Commodity	1970-79	1980-89	1990-94	1995-01
Tobacco	47.7	54.0	68.7	61.4
Tea	21.2	16.3	9.6	8.6
Groundnuts	7.7	2.5	-	-
Cotton	2.9	1.0	1.0	1.3
Sugar	7.2	11.7	6.5	8.3
Coffee	-	-	-	1.6
Pulses	-	-	-	0.8
Rice	-	-	-	0.4
Other	13.3	14.5	14.1	17.6

Source: Chirwa and Chilowa (1999) and NEC (2002).

What can also be observed from the trends in export composition is that the post-reform period is associated with the emergence of new export crops such as coffee, pulses and rice and the loss of the groundnuts market. Nonetheless, other non-traditional exports are emerging as viable alternatives, although they still contribute less than 3 percent to total exports. The traditional exports of tobacco tea and sugar remain the dominant exports for Malawi. While the international price for groundnuts has been stable, the export market for Malawian groundnuts collapsed. One likely reason for this is that prior to liberalisation of agricultural marketing services, groundnuts bought from smallholder farmers were being exported by ADMARC, but after liberalisation ADMARC's role in groundnuts marketing has substantially diminished. Domestic trade in groundnuts is dominated by small private traders who eventually sell to Malawian manufacturers. Overall, however, export earnings in dollar terms have been declining since the late 1990s, due to the declining international prices of exports, declining profitability in smallholder agriculture resulting from disproportionate increases in prices of inputs, high transport costs and poor macroeconomic environment (World Bank, 2003).

4. Impact of Reforms on Food Security of Rural Households

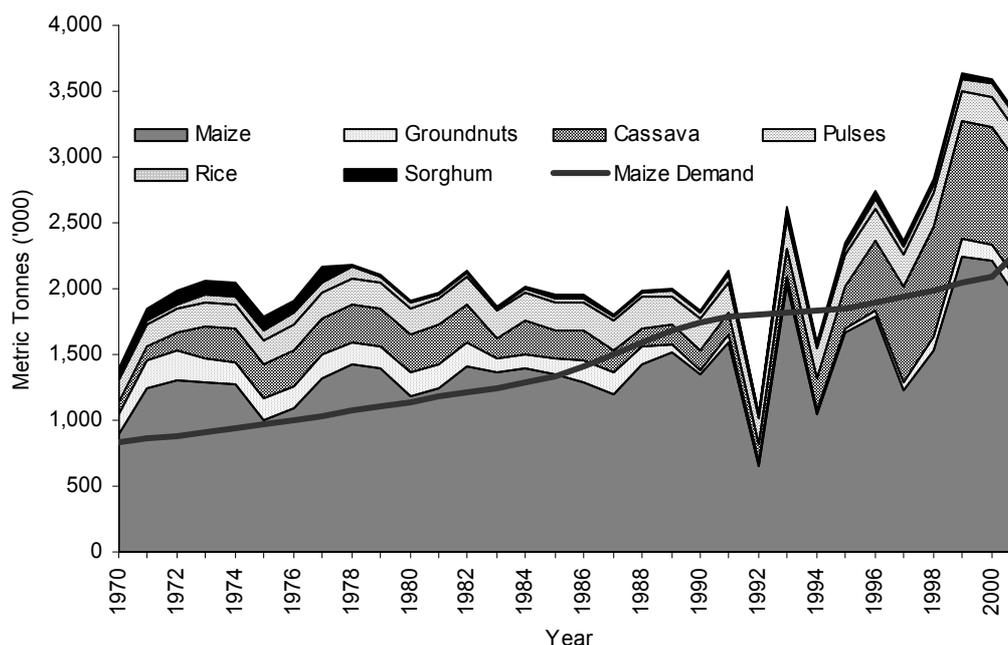
The concept of food security is multi-faceted and has been defined and interpreted in different ways in different countries, although such definitions reflect the dimensions of food availability, accessibility and utilisation (FAO, 2003). In Malawi, food security has been historically defined in terms of national self-sufficiency in maize, which is the main source of calories for more than 67 percent of the population (World Bank, 2003). Most government reports place maize at the centre of food security and agricultural development policy. The food policy emphasis prior to the 1990s was centred on achieving self-sufficiency in food or maize production. As a result most agricultural research and extension services concentrated on improving productivity in maize production (Msukwa, 1994). However, the production of maize had remained relatively stable over time, growing at variance with the population. Maize remains the main staple food for many households in Malawi, and in some areas households cultivate other food crops for sale in order to purchase maize.

4.1 Changes in National Food Security

The production patterns of the main food crops in Malawi reveal major maize shortages in the late 1980s and in the 1990s that necessitated importation of maize (Figure 5). ADE (2000) estimated that imports of maize were typically between 100,000 and 150,000 metric tonnes during the years of shortages since 1987. Taking maize as the

main staple food and using a consumption of 185 kilograms per capita for a staple food, the national food situation was relatively better in the 1970s compared to the situation since in the late 1980s. In some cases, other food crops such as cassava, pulses, rice and sorghum are bridging the national shortages in maize production and supply. Nonetheless, estimates of cassava production show substantial increases in the late 1990s, but only a few households produce cassava and as the World Bank (2003) also notes the estimates for root crops (cassava and sweet potatoes) tend to be overstated and understate the potential food shortages.

Figure 5 Trends in Production of Main Food Crops, 1970 – 2001



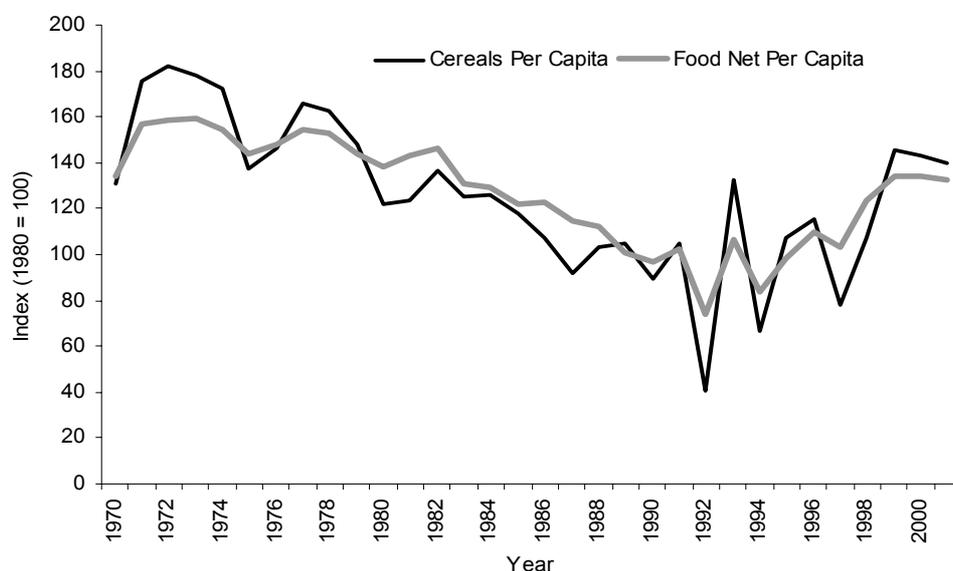
Source: Computed based on FAO data

The increase in food production in 1999 and 2000 has been largely attributed to good weather and the implementation of the agricultural safety net programmes including the free 'starter pack' and targeted input program and the input credit facilities under the agricultural productivity and improvement programme and from the Malawi Rural Finance Company (World Bank, 2003). However, the growth in food production has not been sustainable, with a decrease in 2000/01 season in all major food products.

The ultimate quest is whether the impressive growth rates of the agricultural sector experienced recently have consequently led to changes in food security in Malawi. Although the absolute food production figures show that in most years food production was above the minimum requirement, the per capita production reveal food security problems even at national level. The trends in overall national food security are revealed in the production of cereals and food crops per capita between 1961 and 2001 (Figure 6). Both the cereal and food production per caput indices show a declining trend particularly between 1980 and 1991 during the early period of adjustment, although production per capita pickup afterward. There is also high variability in per capita cereal production particularly in the 1990s due to the droughts in 1992, 1994 and 1997. It is worth noting that most of the agricultural sector reforms, particularly the domestic pricing reforms took place in the 1990s which seem to correlate with increases, though variable,

in cereal and food production per capita. The per capita cereals and food production during adjustment programmes (1981-2001) has been substantially lower on average compared to the pre-adjustment period.

Figure 6 Cereal and Food Production Indices, 1970 – 2001



Source: Computed based on FAO data

The inconsistent trends in national food security are also reflected in the outcome indicators such as the nutritional status of children under five years of age. Table 6 presents the trends in the nutritional status of the under-fives between 1992 and 2000. Three protein-energy malnutrition indicators have been used in Malawi: stunting (low height-for-age) representing chronic malnutrition, wasting (low weight-for-height) representing acute malnutrition and underweight (low weight-for-age) describing the overall measure of malnutrition. GoM/NSO and CSR (1996) note that wasting is a very sensitive indicator; and its levels can change rapidly with food availability or disease prevalence.

Table 6 Trends in the Nutritional Status of Under-Five Children, 1992 – 2000 (percent)

Indicator	1992 (DHS)	1995 (MIS)	1998 (IHS)	2000 (DHS)
Stunting	48.7	48.3	59.1	49.0
Wasting	5.4	7.0	9.3	5.5
Underweight	27.2	29.9	29.6	25.4

Notes: DHS = Demographic and Health Survey, MIS = Multiple Indicators Survey, IHS = Integrated Household Survey

Sources: NSO (2002), GoM/NSO/CSR (1996), NSO and ORC Macro (1994, 2001)

The progress in the three indicators of nutritional status has been mixed. Stunting marginally fell from 48.7 percent in 1992 to 48.3 in 1995 but increased by more than 10 percentage point in 1998 and fell to 49 percent in 2000. Using data from the two demographic surveys, it is apparent that stunting has remained relatively stable despite the many economic reforms implemented by the authorities that might have uplifted the status of the population. Similarly, the indicator of acute malnutrition (wasting) shows a

similar trend increasing in the last half of the 1990s and falling but above the 1992 level in 2000. It must be noted however, that the late 1990s was characterised by episodes of drought or bad weather, although the surveys were conducted during the years with normal weather conditions. The overall measure of malnutrition improved marginally from 27.2 percent in 1992 to 25.4 percent in 2000, but the late 1990s show that malnutrition increased in Malawi. The marginal worsening of nutritional indicators match the trends in food production and per caput supply of the main staple food in Malawi, and shows that economic reforms have not improved the quality of life for a large proportion of the population.

4.2 Changes in Household Food Security

Economic reforms can affect changes in household food security either through changes in own production or changes in the purchasing power through increases in incomes. We explore these effects using matched household panel data between 1998 and 2002. Table 7 shows food crop production by farming households by land size category. The 1998 data show that maize production increased with land sizes.¹² This is generally true for cassava, beans and groundnuts production, but not true for rice and millet. Aggregate maize production fell for households with more than 0.70 hectares of cultivated land. However, other food crops such as sweet potatoes, soya beans and pigeon peas have emerged as alternative products. The structure of food production in the rural areas remains the same. Recent studies in the rural areas tend to support the *status quo* in the structure of food crop production and cash crop production in general. For example, in a qualitative study of households Mvula et al. (2003) note that many households produce the same food crops as they were producing 5 or 10 years ago, what has changed is the area cultivated and in the case of maize to meet the subsistence needs of the household.

¹² The integrated household survey questionnaire did not collect quantity of cash crops harvested by the household, only the value of sales for cash crops were obtained. We therefore restrict the comparative production analysis to food crops only. The land size category of less than 0.7 ha has 125 households that are landless in 1998 while all households in this land holding category were landless in 2002. The number of landless households has increased while there has also been upward mobility in the land holding sizes over the two year period. However, there are bound to be measurement errors in land sizes in the two periods. The figures for 2002 should however be interpreted with caution because the reference agricultural season, 2001/2002 season, was a drought year and production levels may have been affected by the drought.

Table 7 Mean Food Crop Production by Farm Households by Land Size, 1997/8 and 2002 (Kilograms)

Land Size (Ha)	IHS 1998				CPS 2002			
	0.00	0.70	1.50	Over	0.00	0.70	1.50	Over
	-	-	-	1.99	-	-	-	1.99
	0.69	1.49	1.99		0.69	1.49	1.99	
Maize (local)	157	371	534	828	-	449	235	200
Maize (hybrid)	341	611	673	859	-	350	414	278
Cassava	599	1671	1976	1642	-	175	637	332
Groundnuts	231	242	261	499	-	134	132	95
Rice	652	796	572	326	-	250	197	251
Millet	-	273	25	-	-	33	13	38
Beans	6	50	45	101	-	2	15	13
Sweet Potatoes	-	-	-	-	-	55	64	43
Soya Beans	-	-	-	-	-	-	270	4
Pigeon Peas	-	-	-	-	-	17	9	15
Other	111	83	620	38	-	-	-	-
<i>No. of Households</i>	<i>270</i>	<i>161</i>	<i>39</i>	<i>23</i>	<i>254</i>	<i>24</i>	<i>151</i>	<i>140</i>

Notes: Of the households with land sizes of less than 0.7 ha, 125 households and all the 254 households in 1998 and 2002 were landless, respectively.

Source: Computed based on matched household sample from NSO (2000) IHS and CSR (2002) CPS

Economic reforms were also expected to induce positive changes in incomes and expenditure in the rural areas due to the anticipated working of the market mechanism and the price transmission mechanism. For example, liberalisation of agricultural marketing and pricing were expected to result in better prices for smallholder farmers in the rural areas. However, data presented in Table 8 does not confirm that household welfare has improved in the post-reform period.¹³ Real expenditure on food and average expenditure have substantially declined in 2002, suggesting that household welfare has worsened in the post-reform period. The trend in rural household expenditure (income) can be explained by the declining trends in the production, poor international price, poor price transmission mechanisms and declining real domestic prices. The intermediate outcomes of reforms have not been favourable, and these unfavourable conditions have negatively affected the welfare at household level. For instance, although the marketing of agricultural crops is handled by private traders, studies show that these private traders operate as local oligopolists when buying produce from smallholder farmers by practicing high degrees of price discrimination and announcing better prices while their measuring instruments are adjusted in disfavour of smallholder farmers (Mvula et al., 2003). During times of food supply shortages, these private traders offer higher prices to maize consumers which most rural households cannot afford.

¹³ Income data is difficult to estimate or recall in rural areas and there is a tendency to over-state and understate the true levels of income. Here, we assume that the expenditure data is more representative of the trends in household welfare and the measure of income is based on consumption. The 2002 expenditure figures were deflated by the consumer price index using 1998 as the base.

Table 8 Annual Real Expenditure of Farm Households by Land Size 1997/8 and 2002
(Average Malawi Kwacha per Household at 1998 Prices)

Land Size (Ha)	IHS 1998				CPS 2002			
	0.00 - 0.69	0.70 - 1.49	1.50 - 1.99	Over 1.99	0.00 - 0.69	0.70 - 1.49	1.50 - 1.99	Over 1.99
Food Expenses	4,461	8,092	11,452	13,205	4,217	6,876	6,690	7,495
House Expenses	750	566	1,750	420	724	553	452	630
Clothing	1,218	1,181	2,114	2,697	414	790	1,109	614
Household Expenses	422	322	699	752	241	90	211	277
Medical Expenses	118	141	97	255	161	114	137	175
Education Expenses	138	114	43	512	586	112	252	304
Farm Inputs	164	313	552	5,355	-	1,018	863	1,944
Other Expenses	166	84	53	208	865	99	253	469
Total Expenses	7,438	10,814	16,762	23,404	7,208	9,653	9,967	11,908
<i>No. of Households</i>	<i>270</i>	<i>161</i>	<i>39</i>	<i>23</i>	<i>254</i>	<i>24</i>	<i>151</i>	<i>140</i>

Notes: There were differences in the recall period for most income categories particularly in the CPS where shorter time intervals were used on income from business and wages which did not include the cost of sales. This tends to overstate the contribution of business and labour market earnings. The expenditure data are more reliable than the income data. Of the households with land sizes of less than 0.7 ha, 125 households and all the 254 households in 1998 and 2000 were landless, respectively.

Source: Computed based on matched household sample from NSO (2000) IHS and CSR (2002) CPS

Due to increases in input prices resulting from the massive depreciation of the Malawi Kwacha and the declining prices for key crops, there has been a decrease in the profitability of some major crops grown by smallholder farmers. The World Bank (2003) using data from households that belong to a marketing co-operative show that average gross margins for burley tobacco, cotton, paprika, cassava and groundnuts had declined substantially between 1995 and 2001. Not many farmers belong to such marketing co-operatives and as Mvula et al. (2003) note most farmers sell their produce to private traders in desperation, lack the bargaining power and are easily taken advantage of and cheated by private traders. It implies that the real incomes realised from agricultural produce remain under threat in the rural areas despite economic reforms.

Although, the national food security situation would indicate sufficient maize, most households in Malawi do not produce adequate food to last them throughout the year. The household food security situation may be severe for some farming households due to differences in the distribution of resources, even in periods with normal weather conditions. Most farming households experience land constraints due to fragmentation and declining fertility and 65 percent live below poverty and are therefore unable to produce food to last them the whole year or to purchase maize from the market. For instance, in 1996/7 season 3.9 percent and in 2001/02 season particularly between January and March about 78 percent of farming households were without food (NEC, 2002). Nthara (2002) in a survey of farming households found that 83 percent of the respondents run out of maize before the next harvest, with 64 percent being without food for 6 months or more.

In order to meet the shortfall in own food production, insecure households increasingly tend to acquire food from the market either from individual private traders or at a local produce market or from the state marketing agency, ADMARC. In 2001/02 the

proportion of households acquiring food from ADMARC was lower than 2000/01 mainly due to the fact that ADMARC was not active in the purchase and sale of maize due to the financial problems that it is experiencing (Mvula et al., 2003). Households that run out of own food production also tend to cope by participating in the casual labour (*ganyu*) market for in-kind or cash payments and through distress sales of household assets to obtain cash to purchase food, some engage in begging and some obtain consumption loans from money lenders, and sometimes reduce the number of meals taken per day.

5.0 Conclusions

This study set out to investigate the impact of economic and trade reforms on food security at national and household levels in Malawi. Malawi is one of the countries with long history of structural adjustment programmes in sub-Saharan Africa. Economic reforms under structural adjustment programmes commenced in 1981 and in some cases the implementation had been partial with policy reversals. Reforms with direct effects on agriculture involved fiscal policy (removal of fertilizer subsidies), monetary policies (devaluation of currency and financial liberalisation), price policy (liberalisation of agricultural produce pricing), trade policies (liberalisation of agricultural marketing and removal of barriers to international trade) and institutional reforms. In some cases, the government was hesitant in implementing some of the policy and at times leading to policy reversals. Such actions created uncertainties on the direction of reforms and private agents were uncertain about government commitment in the creation a conducive environment for private sector-led development and growth. The poor policy combinations also resulted in high macroeconomic instability, creating an economic environment characterised by high risk and transaction costs.

The reforms have generated limited benefits to the agricultural sector. While both international prices and domestic prices have been declining in real terms during the adjustment period, there is no evidence to suggest that the movements in the international prices and real exchange rate are reflected in the behaviour of real domestic prices. The relationship between international prices and domestic prices is negative, and real exchange rate depreciation is associated with falling real domestic prices. There have also been marginal improvements in the integration of domestic spatial prices for agricultural produce prices. The structural composition of agricultural exports have not changed following reforms, and export earnings in dollar terms have fallen and agricultural exports remain dominated by the traditional export crops of tobacco, tea and sugar. Despite falling real prices, agricultural production has been improving over time and the gains mostly seem to originate from improvements in expansion in area under cultivation. There is, therefore, a negative supply response in the agricultural sector. It is not possible, however, to establish whether this is a reflection of poor quality of data or that economic agents and smallholder farmers in particular expand their production in periods of declining prices to maintain a targeted level of income or consumption.

The impact of various reforms on food security is rather limited. Food security outcome indicators at national level such as indices of the nutritional status of under five children show that stunting (chronic malnutrition) and wasting (acute malnutrition) have marginally increased while underweight had marginally fallen between 1992 and 2002. At household level, crop production by farm households with different land holding sizes between 1998 and 2002 declined substantially due to the drought in the 2001/02 agricultural seasons. However, the structure of production of food crops and cash crops

remain the same apart from increase in tobacco and alternative food crops such as sweet potatoes and pulses. There have also been increases in the area cultivated for food crops through expansion in marginal lands and in other cases household employ intercropping methods on their small plots. There is also evidence that welfare may have declined in the post-reform period, with real expenditures for farming households declining between 1998 and 2002. Due to increases in input prices, decreases in the producer the profitability of major crops such as burley tobacco, cotton, paprika, cassava and groundnuts declined substantially between 1996 and 2001.

Overall, no major structural shifts in the prices, production and export trade have occurred in the agricultural sector following economic reforms. While the constraints on private sector participation have largely been eliminated with reforms, the private sector has not responded optimally and international trade is dominated by a few enterprises. Private traders in agricultural marketing in the domestic market remain small and continue to face business constraints and high risk market environment; farmers remain unorganised and are easily taken advantage of by private traders through improper business practices. Economic reforms that have been implemented in Malawi have had little impact on improving the food security of rural households. The food security situation at the household level has worsened over time, with the proportion of households in the communities that are food insecure has increased compared to 5 years ago.

Nonetheless, there exist many constraints that have implications on food security and the functioning of markets. First, smallholder farmers continue to face credit constraints exacerbated the collapse of the government administered Smallholder Agricultural Credit Administration (SACA) credit scheme in 1992 that offered subsidized credit at a national level. Although a number of micro finance institutions have mushroomed in the past decade, they tend to specialize in financing off-farm business activities. Secondly, the collapse of SACA was also followed by the collapse of farmers' clubs that were a vehicle for the delivery of credit facilities under SACA and for the delivery of extension services. Many smallholder farmers remain unorganised and very few have formed co-operatives. Thirdly, the quality and adequacy of infrastructure such as domestic and international road network, telecommunication facilities were accorded low priority during the adjustment period. The poor road network poses a major challenge in the development of the agricultural sector in terms of access to agricultural inputs and produce or food markets.

Lastly, the reform process in Malawi did not recognize the importance of complementary and compensatory policies. In many cases there was no policy analysis during the design of various policies that would have enabled policy makers to identify various welfare groups and how policies would have been affected different groups. This would have enabled policy makers to design complementary or/and compensatory policy to protect the vulnerable groups. Adjustment policies were implemented hastily without considering the necessary conditions for effective policy. For example, some of the government services that benefited smallholder farmers such as extension services, credit facilities and state-marketing activities were withdrawn without credible replacement institutions and without the creation of a conducive environment.

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Table A1 Agricultural Sector and Related Reforms, 1982 - 2001

Year / Loans	Main Policy Actions Taken
1982	<ul style="list-style-type: none"> ○ Devaluation of the Malawi Kwacha in April 1982 by 15 percent. ○ Increase of smallholder producer prices, notably for maize.
SAL I	<ul style="list-style-type: none"> ○ Expansion of tax base and increasing tax rates. ○ Increased recurrent budget allocation for agriculture and other key economic and social sectors. ○ Adjustment of interest rates.
1983	<ul style="list-style-type: none"> ○ Devaluation of the Malawi Kwacha in September 1983 by 12 percent. ○ Increase of smallholder producer prices, notably for maize ○ Adjustment of interest rates.
1984	<ul style="list-style-type: none"> ○ Devaluation of the Malawi Kwacha in January 1984 by 3 percent. ○ Increase of smallholder producer prices, notably for maize.
SAL II	<ul style="list-style-type: none"> ○ Adjustment of interest rates. ○ Strengthening of the Agricultural Development and Marketing Corporation (ADMARC) financial management capabilities. ○ Financial restructuring of ADMARC, Malawi Development Corporation (MDC) and Press Corporation through asset swaps.
1985	<ul style="list-style-type: none"> ○ Devaluation of the Malawi Kwacha in April 1985 by 15 percent. ○ Adjustment in interest rates. ○ Increase in smallholder producer prices. ○ Industry price decontrol (41 percent of the items) ○ Improved buoyancy of tax system, increased non-tax revenues from higher fees and levies ○ Increasing of recurrent budget to key economic and social sectors.
1986	<ul style="list-style-type: none"> ○ Devaluation of the Malawi Kwacha by 9.5 percent in January and 10 percent in August 1986.
SAL III	<ul style="list-style-type: none"> ○ Increase in smallholder producer prices ○ Entry and establishment of Leasing and Finance Company in 1986 as a lease finance company. ○ Postponement of elimination of fertilizer subsidies to 1989/90. ○ Price decontrol, except for petrol, low-grade beef, fertilizers, sugar, and vehicle spare parts. ○ Preparation of an export promotion strategy and establishment of export financing facility. ○ Introduction of a programmatic budget system.
1987	<ul style="list-style-type: none"> ○ Devaluation of the Malawi Kwacha in February 1987 by 20 percent. ○ Adjustments in interest rates. ○ Divestiture of ADMARC's investments unrelated to its marketing activities. ○ Liberalization of lending rates by commercial banks. ○ Intra-regional differentiated producer and consumer maize prices implemented to expand the role of the private sector in marketing smallholder crops except tobacco and cotton. ○ Deregulation of agricultural marketing activities through the Agriculture (General Produce) Act. ○ Government took over from ADMARC, the financing of strategic grain reserves.

Table A1 (continued)

Year	Main Policy Actions Taken
1988	<ul style="list-style-type: none"> ○ Devaluation of Malawi Kwacha by 15 % in January. ○ Deregulation of deposit rates.
<i>ITPAC</i>	<ul style="list-style-type: none"> ○ Removal of credit ceiling and credit rationing.
1989	<ul style="list-style-type: none"> ○ Decontrol of beef prices. ○ Deregulation of the banking industry through legislation of the new Reserve Bank Act of 1989 and Banking Act of 1989. ○ Liquidity reserve requirement was enforced at 10 percent of commercial bank liabilities effective June 1, with commercial banks earning interest on reserves. ○ Removal of requirement for prior allocation by the Reserve Bank for 65 percent of all imports. ○ Reduction of the scope of export licensing. ○ Revision of duty drawback system.
1990	<ul style="list-style-type: none"> ○ Devaluation of Malawi Kwacha by 7 % in March. ○ Restructuring of Post Office Savings Bank into Malawi Savings Bank.
<i>ASAC</i>	<ul style="list-style-type: none"> ○ Incorporation of Leasing and Finance Company as a leasing finance bank on September 14. ○ Preferential lending to the agricultural sector was abandoned. ○ Reserve Bank of Malawi introduced the marketing of its own bills. ○ Liquidity reserve ratio adjusted four times (January: 25 %, May: 15 %, June: 10 %, September: 20 %) ○ Liquidity reserve ratio ceased to earn interest with effect from December 1. ○ Increase in smallholder producer prices. ○ Estate land rents adjusted and rose in the 1990/91 season to real 1985 level.
1991	<ul style="list-style-type: none"> ○ Incorporation of National Finance Company as a lease finance bank on April 17. ○ Entry and incorporation of CBM Financial Services, a subsidiary of Commercial Bank of Malawi, as a lease finance company on June 28. ○ Incorporation of the Finance Corporation of Malawi as a corporate bank (trade financing) on August 1. ○ Incorporation of Indebank Financial Services Limited as a corporate bank (trade financing) on September 6. ○ Liquidity reserve ratio decreased to 15 percent with effect from August 1. ○ Complete liberalization of foreign exchange allocation. ○ Introduction of a narrow and temporary negative list of imports. ○ Introduction of two-payment price system for smallholder tobacco. ○ Other agents allowed to market fertilizer. ○ Improved cash flow management for Smallholder Farmer Fertilizer Revolving Fund of Malawi. ○ Removal of fertilizer subsidies. ○ Rationalisation and government financing of ADMARC development functions. ○ Liberalization of production of burley tobacco by smallholder farmers. ○ Maize research shifted to develop high yielding flint varieties. ○ Transfer of land from customary to estates halted except in low population density areas. ○ Enforcement of woodlot environmental covenants strengthened. ○ Preparation of a 3-year rolling public sector investment programme, and maintenance of satisfactory fiscal deficit.

Table A1 (continued)

Year	Main Policy Actions Taken
1992	<ul style="list-style-type: none"> ○ Devaluation of Malawi Kwacha by 15 percent in June and 22 percent in June. ○ Liquidity reserve ratio increased to 20 percent with effect from December 23.
<i>EDDRP</i>	<ul style="list-style-type: none"> ○ Estate land rents adjusted and rose to real 1985 level in the 1992/93 season. ○ Issuance of investment policy statement and legislation for the establishment of Malawi Investment Promotion Agency. ○ Deregulation of entry into manufacturing industries. ○ Review of labour market imperfection and policy options including minimum wage policy. ○ Reduction of base surtax rate to 30 percent.
1993	<ul style="list-style-type: none"> ○ Liquidity reserve requirement increased to 30 percent with effect from October 29. ○ Elimination of the differentials in surtax rate levied on imports and domestic goods.
1994	<ul style="list-style-type: none"> ○ Floatation of the Malawi Kwacha in foreign exchange in February. ○ Elimination of surtax exemption for domestically produced goods. ○ Abolishing the negative list of imported commodities. ○ Export proceeds surrender requirement was abolished, except for tea, sugar and tobacco. ○ Consolidation of protective effect of domestic surtax exemption into existing tariff system. ○ Limiting resulting consolidated tariff rates to maximum of 75 percent. ○ Implementation of major tariff schedule revisions. ○ Establishment of a Capital Market Department at Reserve Bank to conduct periodic auctions for the issuance of RBM bills.
1995	<ul style="list-style-type: none"> ○ Elimination of direct bank credit controls. ○ Penalty for non-compliance of liquidity reserve ratio was increased to 45 percent at the beginning of the year to 55 percent in April to 60 percent in June. ○ Entry and incorporation of Finance Bank as a commercial bank on March 29. ○ Incorporation of Malawi Savings Bank as a merchant bank on March 29. ○ Repeal of the Special Crops Act, removing restrictions on production and marketing of high value crops by smallholder farmers. ○ The 10 percent temporary export levy on tobacco and sugar was reduced to 8 percent.
1996	<ul style="list-style-type: none"> ○ Bank rate reduced from 45 percent on June 12 to 35 percent on September 9 to 27 percent from November 13 and the liquidity reserve requirement dropped from 55 percent to 47 percent.
<i>FRDP I</i>	<ul style="list-style-type: none"> ○ Reorientation of public spending to pro-poor areas. ○ Reduction of the number of tariff bands and maximum tariff rate reduced to 40 percent. ○ The export levy on tobacco and sugar was reduced to 4 percent but coffee was included. ○ Introduction of the cash budgeting system. ○ Increases in land rents. ○ Amendment of the Land Act. ○ Lifting all constraints on smallholder access to burley. ○ Replacement fixed producer/consumer price system for maize with a price band. ○ Removal of licensing and registration procedures for private traders in seed and fertiliser marketing.

Table A1 (continued)

Year	Main Policy Actions Taken
1997	<ul style="list-style-type: none"> ○ Bank rate was reduced from 27 percent to 23 percent on August 1. ○ Penalty for non-compliance of the liquidity reserve requirement was reduced to 43 percent and calculation of liquidity reserve ratio was changed from daily to monthly average and Reserve Bank started paying interest rate on reserves. ○ Removal of all licensing requirements for imports and exports, except for health, security and environmental related commodities. ○ Elimination of import duty rate on raw materials used in manufacturing, and maximum rate on finished products was reduced from 40 to 35 percent. ○ The corporate tax on firms in export processing zones was eliminated. ○ Introduction of the 'starter pack' – a targeted input programme for food insecure households. ○ Privatization of state-owned enterprises.
1998	<ul style="list-style-type: none"> ○ Entry and incorporation of Continental Discount House in March and the introduction of inter-bank market lending among banks.
<i>FRDP II</i>	<ul style="list-style-type: none"> ○ Introduction of daily basis liquidity reserve requirement observance by commercial banks with effect from August 1 and Reserve Bank ceased paying interest rate on reserves. ○ Commercial banks discretion to put reserves with either Reserve Bank or Discount House or in their vault was introduced. ○ Bank rate was decreased from 32.5 percent to 30 percent with effect from September 14. ○ Incorporation of Loita Investment Bank as a merchant bank on November 28. ○ Devaluation of Malawi Kwacha. ○ The export levy was eliminated. ○ Privatization of state-owned enterprises.
1999	<ul style="list-style-type: none"> ○ Bank rate increased from 43 percent to 47 percent on January 11. ○ Privatization of state-owned enterprises. ○ Increase in non-wage agricultural sector budgetary allocation by 22 percent. ○ Creation of the National Food Reserve Authority, replacing the Strategic Grain Reserve managed by ADMARC. ○ Maximum tariff rate was reduced to 25 percent.
2000	<ul style="list-style-type: none"> ○ Bank rate decreased to 44.5 percent in August and increased to 53.2 percent in December.
<i>PRGF</i>	<ul style="list-style-type: none"> ○ Implementation of the donor-funded Agricultural Productivity Improvement Programme (APIP). ○ Privatization of state-owned enterprises. ○ Abandonment of the maize price band.
2001	<ul style="list-style-type: none"> ○ Implementation of the Targeted Input Programme (TIP) – a safety net programme for resource poor farmers. ○ Suspension of the programme of privatization of state-owned enterprises.

Notes: SAL = Structural Adjustment Loan, ITPAC = International Trade Policy Adjustment Credit, ASAC = Agricultural Sector Adjustment Credit, EDDRP = Entrepreneurship Development and Drought Recovery Programme, FRDP = Fiscal Restructuring and Deregulation Programme, PRGF = Poverty Reduction and Growth Facility.

Source: World Bank (1996, 2003) and Mlachila and Chirwa (2002).