Recent Trends and Future Prospects for

Agricultural Growth, Poverty Reduction and Investment in Southern Africa

ReSAKSS-SA

Annual Trends Report 2009

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Acronyms

ADMARC	*Agricultural Development and Marketing Corporation (Malawi)*
CAADP	*Comprehensive Africa Agriculture Development Programme*
CBOT	*Chicago Board of Trade*
CGIAR	*Consultative Group on International Agricultural Research*
COMESA	*Common Market for Eastern and Southern Africa*
CPI	*Consumer Price Index*
DFID	*UK Department for International Development*
ECOWAS	*Economic Community of West African States*
FAO	*Food and Agriculture Organization of the United Nations*
FDI	*Foreign Direct Investment*
FRA	*Food Reserve Agency*
FYA	*Free Trade Agreement*
GATT	*General Agreement on Tariffs and Trade*
GMO	*Nongenetically modified*
GDP	*Gross Domestic Product*
ICRISAT	*International Crops Research Institute for the Semi-Arid Tropics*
IITA	*International Institute of Tropical Agriculture*
ILRI	*International Livestock Research Institute*
IMF	*International Monetary Fund*
IWMI	*International Water Management Institute*
NEPAD	*New Partnership for Africa's Development*
ReSAKSS	*Regional Strategic Analysis and Knowledge Support System*
ReSAKSS-SA	*Regional Strategic Analysis and Knowledge Support Systems for Southern Africa*
SADC	*Southern African Development Community*
SAFEX	*South African futures exchange*
SDRs	*Special Drawing Rights*
SIDA	*Swedish International Development Cooperation Agency*
USAID	*United States Agency for International Development*
VAT	*Value-added Tax*

Executive Summary

This is a summary of the external and internal causes of the food crisis in southern Africa in 2008 as well as the behavior of maize prices, the impact that the price increases had on consumer welfare and measures adopted by countries to lessen this impact.

GLOBAL CAUSES OF FOOD PRICE INCREASE

The global developments in cereal prices witnessed in 2008 were not unprecedented. Unlike the price spikes experienced in southern Africa during 2002 and 2006 marketing seasons, the 2008 price spike was not related to weather. What then caused this latest spike in global and regional food prices?

Because prices of staple crops, livestock and nonfood commodities all rose at the same time, the causes go beyond the simple supply shocks. Steady global population growth has led to growth in demand for food each year. Yet growth of food production, particularly in southern Africa, has been alarmingly stagnant. The region remains one of the primary

targets for United Nations World Food Programme. For as long as demand growth outstrips supply growth, prices will always trend upwards.

Global demand for cereals has also been stimulated by recent increases in subsidies for biofuels in North America and Europe. Increasing incomes in Asia have increased demand for meat products indirectly causing increased demand for animal feed. Furthermore, the surge in the demand for agricultural commodity derivatives by institutional investors in 2008 fueled speculation in commodity markets. It is apparent that the increase in global food prices in 2008 was brought about by the culmination of the convergence of several factors.

EXTERNAL CAUSES OF THE PRICE CRISIS

At a time when global prices were rising, food prices in southern African region also rose. Was the global market panic transmitted to markets of southern Africa? Food markets in the region are undoubtedly influenced by events outside the region. What remains debatable is the extent of this influence. In the short run, food prices in the region may move independent of world prices but in the long run, the regional market is part of the world market. Thus, it is possible that the shock that characterized global food markets was gradually transmitted to regional markets. The extent of transmission to each domestic market varies depending on actual trade flows, price and market policies, transfer costs and consumer preferences.

During the latest crisis in food prices in southern Africa, flows of grain imports from outside the region were subdued. There was, therefore, no price shock from direct import of maize. This was not the case for other grains such as rice and wheat that the region imports every year. Even though the region imported very low levels of the external shock in grain markets, the region imported external shocks in the energy sector. The region imports nearly all its petroleum requirements. The shocks in global oil markets were fully and automatically transmitted to southern Africa. What remains unresolved is how influential shocks in global fuel prices caused increases in regional food prices.

INTERNAL CAUSES OF THE PRICE CRISIS

Besides the external factors, there are internal factors that did not help slow down the crisis in food prices in the region. The low grain stock-to-use ratios did not help absorb the shock in grain prices in most countries. Another cause of high food prices was the soaring of inflation levels. It is commonly perceived that higher food prices drive inflation levels upwards. This perception lacks merit. Nations which adopt growth-supporting monetary policies experience high inflation levels. Monetary expansion fuels growth in demand and if this growth is not matched with real growth in output, the price level rises. It is the high inflation levels that drove food prices upwards and not vice versa.

The biggest threat for consumers in Malawi, Mozambique and Zambia due to expansionary monetary policies was on food prices. In South Africa (S. Africa), the biggest threat was on fuel and transport costs. In southern Africa, grains and meat staples were the most affected by inflation levels because these commodities accounted for the highest expenditure weight. Over the past 10 years, the general price level trended upwards. With the exception of S. Africa, the inflation levels had repeated seasonal cycles from one marketing season to the next. These recurring intra-seasonal inflation cycles are a reflection of the limited investments in the commodity markets.

GENERAL FLUCTUATION IN MAIZE PRICES

During the 2008 crisis in food prices, maize prices in most countries in the region revealed a state of shock and instability. Unlike Malawi, Mozambique and Zambia, maize prices

in S. Africa displayed a high degree of stability. Seasonal variation in maize grain prices in domestic markets reflected the relative cost of storage and the presence of market and nonmarket risks. Seasonal price changes were lowest in S. Africa because the maize market permits active use of futures markets allowing hedging against price risks. Spot market prices which dominate trades with S. Africa's northern neighbors are less stable than futures market prices. Furthermore, the high price fluctuations in Malawi and Zambia were more than market-based.

Clearly, regional maize prices in 2008 were above normal levels. But in nominal terms, maize price changes in 2008-09 were a small fraction of the changes experienced during the 2002-03 drought season. This result suggests that the region is most vulnerable to climate-change-induced crises than the recent global commodity and financial crisis. It is possible that another crisis of much bigger proportion looms large in the not-so-distant future. Is the region prepared and have lessons been learnt from the latest crisis?

IMPACTS OF RISING FOOD PRICES ON HOUSEHOLDS

Increases in food prices negatively affected urban consumers and net buyers of food in rural areas. The poorest consumers who can afford the least were the most affected by high food prices. Assuming that farm-gate producer prices also rose, surplus food producers were presented with an opportunity to increase their sales revenue. But given the poor governance in the value chains in the region, increases in retail food prices do not necessarily translate to higher producer prices.

The impact on consumption also depended on the availability of substitutes. Certain parts of the region produce and consume dual staple crops, such as maize with cassava. The presence of multiple staples provides shock absorbers in production and consumption. Wheat and rice have made significant inroads into urban diets and consumption budgets. However, maize remains a necessity with few substitution possibilities especially among the poor. Therefore, increases in maize prices posed a serious consumption challenge to poor households since their demand did not respond to price changes in the short run.

The overall effect of higher food prices is increased population of poor households. The full impact of high food prices on nonfood expenditures is poorly understood. Rising food expenditures take away resources to spend on health and education services. Additional work is needed to understand these impacts.

RESPONSES TO MITIGATE IMPACTS OF RISING PRICES

In response to rising food prices, governments in the region had a menu of alternatives ranging from emergency social protection (consumer-end actions) to long-term (producer-end) investments.

Trade measures including waiver of taxes and export restrictions were popular as these were easy to implement. The effectiveness of export restrictive measures was in doubt given the implementation challenges. Surprisingly, governments in the region did not cut domestic food taxes.

Governments of Malawi and Zambia found rising food prices politically untenable and intervened directly in the grain markets. General food subsidies were implemented in these two countries. On the other hand, the South African government allowed consumers to absorb the full shock in prices.

Safety net programs run by government and non-state actors were active before the crisis. The scope of these programs was expanded across the region as they played an important transitory role.

1. Introduction

Domestic food prices in southern Africa increased in 2008. The economies in the region were not completely insulated from the global shock. The rate at which food prices increased in 2008 was, however, lower than the rate of increase in international food prices. Further, the rate and extent of increases in food prices across countries in the region were not uniform. During the food crisis, net exporting countries, such as S. Africa, experienced modest increases in domestic prices and were shielded from the full shock of food prices but net importers, such as Mozambique, experienced large increases in food prices. The Regional Strategic Analysis and Knowledge Support System for Southern Africa (ReSAKSS-SA) undertook a regional study to monitor the dynamics of the region's food prices in the recent past (from 2000 to date) and their impacts on the region's food security.

The objectives of this study were to:

(i) Document, describe and characterize the price movements of key food commodities in southern Africa with special reference to maize.

(ii) Provide knowledge on causes and effects of the food crises.

(iii) Identify policies that governments implemented to reduce the negative impacts of rising food prices.

Although the study is regional in nature, data from four countries (Malawi, Mozambique, S. Africa and Zambia) were used in constructing a regional picture.

This report is divided into seven chapters. Chapter 2 looks at the causes of the crisis of global food prices. This chapter focuses on food availability in the region, the transmission of global price increases to the region and other factors.

Chapter 3 characterizes the extent of the increase in food prices in the region. The broad aim of this characterization was to measure the extent and speed of the increase in general prices and food prices in the 2008/09 marketing season. This chapter compares the surge in general prices and food prices in 2008/09 with the crisis experienced in earlier periods of this decade.

Chapter 4 focuses on price patterns of the main crop staple in the region, maize. This chapter looks at the behavior of maize prices across the four countries in the 2008/09 marketing season and examines the extent to which it deviates from the expected path.

Chapter 5 focuses on the impacts of increases in food prices on various segments of the region's population. Increased food prices in 2008 presented different impacts across different groups of households in the region. The income, expenditure and consumption characteristics of different households were examined and the food expenditure and consumption effect were assessed.

Chapter 6 looks at the various policy measures that countries undertook to counter the effects of increases in food prices. These measures included those that are trade-related, consumer-oriented and producer-oriented. This chapter examines the effectiveness of various measures in remedying the impact of increases in food prices.

The final chapter summarizes the trends of food prices in the region and provides recommendations on short-, medium- and long-term policy measures to manage increases in food prices.

2. Causes of Increases in Global Cereal Prices and Transmission to Southern Africa

2.1 Extent of Increases in Food Prices

The global developments of cereal prices witnessed in 2008 were unusual when looked at only from the perspective of the last decade. But when looked at from a longer historical perspective, the price spike was not unprecedented. The current price spike is neither the only one nor the most significant one to occur in the last 30 years. Southern Africa experienced similar spikes in 2002 and 2006 because of unfavorable weather. What is unique about the spike in 2008 food prices in the region is that it had nothing to do with bad weather.

Between 2000 and 2006, export prices of US Gulf maize hovered around $100/ton. [1,2] Maize prices in the world market started a long rally in May 2006. Prices rose from under $110/ton reaching a peak of $300/ton in June 2008. At the height of the price increase, export

[1] In this report, $=US$.

[2] Yellow maize (no. 3) FOB USA Gulf prices matched FOB price of Argentina Rosaria (Up River).

prices in the world market exceeded S. African domestic prices for the first time in 10 years. Since then, prices in the world market have slid down reaching $160/ton in July 2009. What is clear is that world prices were still above the pre-crisis levels.

The pattern of $-denominated price of maize shows seasonal cycles in the four countries in southern Africa (Figure 2.1). The seasonal pattern was less pronounced in S. Africa but nonetheless synchronized with price movements in Malawi, Mozambique and Zambia. Figure 2.1 also shows that the price spike observed in 2008 was not unusual. In the last 10 years, there were similar price spikes in 2002 and 2006. While the previous price spikes were weather-related, the 2008-09 price spikes had nothing to do with weather. There was largely no maize shortage in the regional market but prices began rising from as early as 2007.

What was also striking was that prices in Mozambique continued increasing in the second half of 2008 and shot above the rest. The reasons Mozambique was exposed to high $ maize prices over and above prices in other countries are unclear. [3] Figure 2.1 also clearly shows that prices were bunched together in 2007 but that they drifted apart in 2008 and 2009. This drifting apart could be due to the different domestic policies and anti-trade policies that worked against integration within the region.

The causes of the steep increases in world and regional food prices in 2008-09 were complex. Different factors differently influenced prices for different commodities. Observing that the price boom included nearly all major basic food crops, livestock and nonfood commodities, the driving forces were beyond simple supply shocks. The unique pattern of increases in food prices in the last few years was a coming together of many supply-side, demand-side and other relevant forces.

This chapter categorizes factors into temporary and permanent elements. Temporary factors include the unfavorable weather in major producing regions of the world and the surge in investment in cereals futures. The permanent factors discussed included the strong GDP growth in developing countries, increases in oil and energy prices, increases in feedstock demand for biofuel, falling stock levels and increasing thinness of international markets.

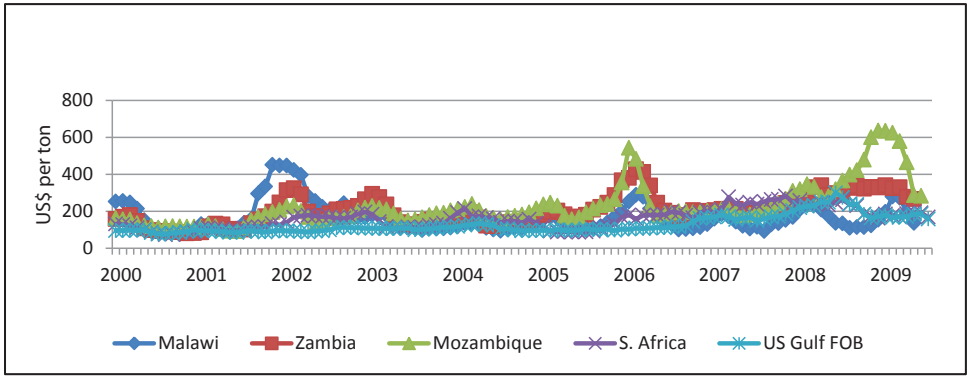

FIGURE 2.1. TRENDS IN AVERAGE MAIZE PRICES IN MALAWI, MOZAMBIQUE, S. AFRICA, US GULF AND ZAMBIA, 2000 - 2009.

[3] The exchange rate of the meticais to the dollar did not appreciate during this crisis. Therefore, the rise in prices shown in Figure 2.1 was 100% in meticais terms.

2.2 Temporary Factors behind Increases in World Food Prices

Negative yield shocks, particularly for wheat in Australia and North America and marginal production increases in Europe resulted in poor harvests in 2006 and 2007 contributing to price increases. Gilbert (2008) argues that this production shock was experienced only for wheat and was offset by good harvests in Argentina, Kazakhstan and Russia. These factors did not explain increases in world prices in maize. At best, the negative yield shock for wheat was a background factor and temporary as higher yields were expected in the very short term.

The increase in investments in cereal-derivative markets by institutional investors and speculators contributed to the rise in short-term futures and spot market prices. The collapse in the US sub-prime mortgage market drove speculators to look for assets with rising prices. Having sensed strains in world food markets, the influx of liquidity and the attraction of speculators by agricultural commodity derivative markets put strong upward pressure on futures. The additional liquidity in the agricultural commodity futures is important but its effects may prove to be transitory as such investments can move rapidly out of cereal markets as profits dictate.

2.3 Permanent Factors behind Price Increases

2.3.1 Economic Growth

Economic conditions that favor growth within and outside the southern African region were considered by many experts as having led to the start of the crisis (UNCTAD Secretariat 2008). The long-term trend of increasing demand for food can be explained by population growth, urbanization and rapid increase in purchasing power in Asia.

Population growth in southern Africa is over 2.5% per annum. At this level of growth rate, the human population in the region will double in less than 20 years. Regional food production would have to double to meet this rising demand. Human population increases in geometrical progression, while production increases arithmetically – much more slowly (Bourne 2009). There is simply not enough land and capacity to increase yields quickly to meet this growing demand for food. These slow but irreversible trends in population growth had an influence on food prices.

Economies of Malawi, Mozambique S. Africa and Zambia all grew at over 5% per annum over the last 5 years. This income growth generated an increase in the demand for food. This is a permanent factor in determining future food prices in the region. Coupled with the economic growth in China and India, growth in demand for food is expected to continue. UNCTAD (2008) argues that despite Asia posting high growth rates in 2006, world food prices did not rise that fast in the immediate aftermath. Increased demand in 2007 and 2008 was, therefore, one among a concourse of several contributory factors.

Income growth and urbanization in developing and emerging economies have changed the structure of food demand. Chinese consumers, for example, are moving away from starchy foods towards meat and dairy products which increase the demand for feed grains. This growing demand for grains puts upward pressure on prices. Further, high incomes imply that increased food demand will become less responsive to price changes and make this a permanent element in determining future prices.

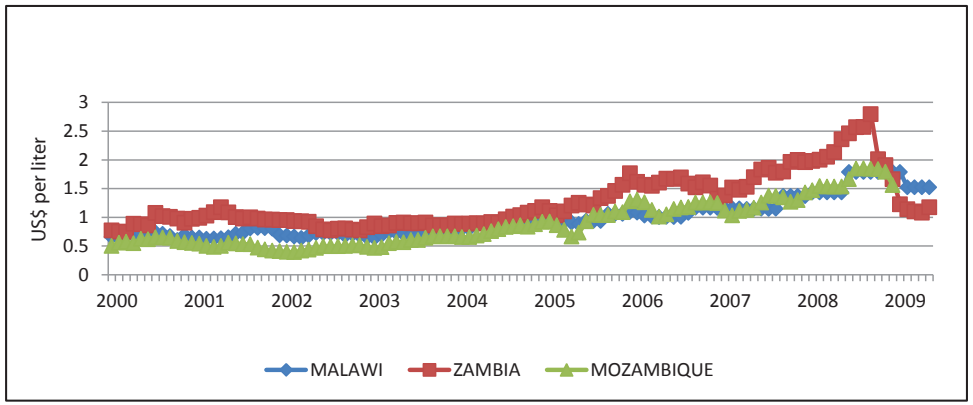

FIGURE 2.2. TRENDS IN PRICES OF PETROL IN MALAWI, MOZAMBIQUE AND ZAMBIA, 2000 - 2009.
Notes: The horizontal axis represents the months as counted from January 2000 to March 2009.

2.3.2 *Use of Maize in the Production of Biofuels*

The diversion of food crops for biofuel production is expected to grow but its impact on food prices remains controversial. There is unsettled debate as to how much biofuel production in US and Europe has stimulated increases in world maize prices. The subsidized use of maize as a biofuel feedstock in US pushed Chicago maize prices upwards (Gilbert 2008). Estimates from the World Bank suggest that ethanol production was responsible for 60% of the increase in food prices. [4]

Given that the S. African futures exchange (SAFEX) maize futures are greatly influenced by Chicago futures, increases in maize prices in southern Africa were seemingly driven by this growing demand for corn in biofuel production in North America and the EU. Under the current US Farm Bill, the increase in corn feedstock demand represents a permanent factor as it remains price-sensitive (OECD 2008).

2.3.3 *Increases in Energy and Fuel Prices*

The high oil and energy prices were important factors contributing to increased production costs for cereals. Gilbert (2008) acknowledged a crude but positive correlation between oil prices and food prices. High oil and energy prices have affected food prices indirectly through rises in fertilizer prices and freight rates. Rapid and steep increases in fuel and fertilizer prices raised the cost of producing food in the region.

The trends in fuel prices shown in Figure 2.2 demonstrate that the shocks in the global oil industry were easily passed on to domestic markets in southern Africa. The prices of petrol have risen since 2003. Fuel prices in Zambia were generally the highest in the region. Petrol prices in Zambia hovered just under $1 per liter between 2000 and 2004. Between 2007 and 2008, prices in Zambia shot from 1.50 to over $2.50 per liter.

[4] Estimates from USDA are much modest at less than 6%. The huge variation in these estimates has fueled further controversy.

Retail petrol prices in Mozambique were as low as $0.50 per liter in 2003. Between 2006 and 2008, petrol prices in Mozambique rose from 1 to $1.75 per liter. Despite the cushion that domestic policies provided against global shocks, governments in the region could not completely insulate their economies against these shocks in the global oil market.

To what extent then did the increase in fertilizer and transport costs fuel increases in food prices? The onset and seasonal timing of increases in oil and energy prices suggest that energy prices may not have been the cause of the immediate increase in food prices (Gilbert 2008). Changes in input prices do not always lead to increases in food prices if and when the effect is mitigated by farmers altering their input proportions.

At best, energy prices were important background factors because producers do not necessarily alter their input proportions in the short run when faced with escalating input prices. If the share of the total costs accounted for by the input is high, the capacity for farmers to mitigate this increase is limited by the availability of good substitutes in the production process. In the short run, producers may not be able to adjust their production practices to high fertilizer prices and high freight rates. The strong economic growth in Asia will lift oil and energy futures prices to higher average levels.

It remains debatable whether changes in input prices led to increases in food prices. The rise in energy prices in the region was an important background factor but it did not directly cause the spike in food prices. Within the short run, producers do not necessarily alter their input proportions when faced with escalating input prices. Further, if the share of the total costs accounted for by the input is high the capacity for farmers to mitigate this increase is limited by the unavailability of good substitutes in the production process. This inability does not necessarily translate into higher producer prices for farmers. Depending on the structure of the market, farmers could instead face reduced gross margins.

TABLE 2.1. AVERAGE DEGREE OF MARKET THINNESS AND STOCK RATIOS IN RELATION TO PRODUCTION AND CONSUMPTION, 2000-2009..

Production/Consumption		S. Africa	Zambia	Mozambique	Malawi	Total
	Imports and exports	20 (2)	9 (1)	16 (2)	7 (1)	16 (2)
Production	Stocks	24 (3)	12 (1)	7 (1)	8 (1)	18 (2)
	Imports and exports	23 (3)	11 (1)	20 (2)	6 (1)	19 (2)
Consumption	Stocks	27 (3)	10 (1)	6 (1)	10 (1)	22 (2)

DATA SOURCES: BUREAU OF STATISTICS, MALAWI, MOZAMBIQUE, S. AFRICA AND ZAMBIA.
Notes: Numbers in brackets are average months of cover available.

Given the absence of producer prices, this review was unable to determine whether producer prices increased during the crisis period as a result of higher input costs. What is clear is that farmer's ability to take advantage of higher retail prices by producing more food in the subsequent season was curtailed by high input costs. OECD (2008) argues that high levels of oil and energy prices are permanent.

2.3.4 Stock-to-Use Ratios

The level of inventories at the end of the crop marketing season is a fundamental driver of grain prices. Ending stocks are the "cushion" or "buffer" stocks available to incorporate increases in demand or reductions in supply in the following crop year (Informa Economics 2007). The larger the level of ending stocks the more comfortable the market with a given level of demand. Particularly, the ratio of closing stocks to total consumption during the year is a key price determinant. The level of cereal stocks in the global market fell relative to use. This meant that the capacity of global markets to buffer and absorb market shocks was reduced. The rally in world cereal prices between 2005 and 2007 can be attributed to low production and low ratios of stock to use.

Production shocks under low stock levels meant prices rose precipitously. Grain prices strengthened when stocks were drawn down relative to usage and weakened when supplies were plentiful compared to demand. In the recent past, stocks were expensive to manage and were not expected to be replenished in the short to the medium term. Because of reduced stock levels, cereal markets remained tight and prices were prone to become volatile.

In southern Africa, the levels of stocks in 2008/09 were largely market-driven as governments did not carry large stocks as part of the farmer support programs. On average, S. Africa had the highest ratios of stock to use (Table 2.1). Malawi and Mozambique had the least ratios. Average stocks in S. Africa were adequate to cover at least 3 months of consumption (Table 2.1). It is no surprise that the amplitude

of variation of maize price in S. Africa was least among the four countries. In the remaining countries, stocks were enough to cover only one month of consumption, and price variation was potentially high.

2.3.5 Thinness of Internal/Regional Markets

The spike in food prices was also generally affected by the thinness of markets. The share of regionally traded volumes relative to the size of regional consumption or production is low in southern Africa. Malawi and Zambia have relatively thin markets. [5] On average, 16% of production and 19% of consumption are traded in the region (Table 2.1). The narrowness of the international maize market ranges from 20% in S. Africa to 7% in Malawi. Mozambique has a relatively broader trade (16%) than Malawi and Zambia. Given the thinness of trade in maize in Malawi and Zambia, domestic maize markets were relatively more insulated from shocks in the global market than in Mozambique and S. Africa. For its part, S. African imports of maize were at an all-time low in the 2009/10 marketing season implying that the domestic markets for maize were also insulated from shocks in the global maize markets. [6]

The thinness of trade appeared to be seemingly related to exposure to price shocks. On average, countries such as Malawi and Zambia had the thinnest trade. During the crisis, grain trade inflows into S. Africa, Malawi and Zambia were largely insignificant. This meant that these markets were less exposed to external shocks. Countries with a significant level of trade inflows were more prone to import the external shock than those with less inflow. Mozambique had the most significant trade inflows in 2008/09 relative to consumption and unsurprisingly suffered the greatest price shock.

[5] Traded volumes in Malawi and Zambia could provide consumption cover for only 1 month (Table 2.1).

[6] Maize prices were by no means protected from global shocks.

2.3.6 Depreciation of the US Dollar

Declines in the value of the US dollar against many currencies are suspected to have caused increases in food prices in dollar terms. If the dollar depreciates, prices in dollar terms are expected to rise ceteris paribus. Since 2005, the US dollar depreciated by 15% against the 2005 euro (Gilbert 2008). The FAO food price index adjusted to reflect changes in exchange rates between the US dollar and IMF's Special Drawing Rights (SDRs) was lower than the unadjusted index (FAO 2008). When US Gulf prices are adjusted for fluctuations in dollar exchange rates, the increase reflected since 2006 was much less. Gilbert (2008) argued that the depreciation of the dollar was an unimportant factor because it was "neither sufficiently large nor sufficiently general to be responsible for more than a small part of the recent rise in food prices." Some costs remain dollar-based and the dollar has not depreciated at all against all currencies.

The depreciation of the US dollar was not a factor behind increases in food prices in the region. The performance of the dollar in the region did not show any evidence of depreciation against the rand, the metical and the kwacha.[7]

2.4 Integration of the Maize Market in Southern Africa

There is an untested notion that domestic maize markets in southern Africa are not connected in any way with world markets and that shocks in world markets are not transmitted to the region. Furthermore, apart from S. Africa, the other countries in the region do not import grain from outside the region and therefore their domestic markets are isolated and immune from any global shocks. This review attempted to unravel why prices in the region increased despite the absence of a production shortfall.

[7] The domestic exchange rate in Malawi and Mozambique appeared fixed during this period. The Zambian kwacha firmed against the dollar in 2005 and 2007 but depreciated together with the S. African rand during the financial crisis.

2.4.1 Correlation in Movements of Maize Prices

To establish whether domestic markets in the region were integrated and shocks in one market were passed on to the others, this review first analyzed correlations in real changes in maize prices and dollar-denominated changes in nominal prices. [8]

Table 2.2 shows that movements of retail maize prices were not strongly correlated between pairs of regional markets in southern Africa. With the exception of the Mozambique and Zambia pair, all the paired correlations were below 0.50. The Malawi and Mozambique pair and the Malawi and Zambia pair had partially identical price movements. The variation in price series in Malawi was partially correlated with variations in Mozambique and Zambia prices. This result suggested that the Malawi, Mozambique and Zambia markets for maize were partially integrated during the period tested.

Price variation in these three countries was not strongly correlated with variations in grain prices in S. Africa. This low correlation suggests that communication and transport networks were inadequate for effective integration of the S. African domestic maize market with markets in the other three countries. However, significant judgment about the efficiency of arbitrage cannot be made on the basis of the Pearson correlation coefficients alone.

2.4.2 Domestic Self-sufficiency in Maize

An examination of the self-sufficiency index across the countries for the last 10 years suggests that not all countries were able to have an index above 100%. For S. Africa, the self-sufficiency index for white maize has been above 120%, for Malawi just over

[8] The price changes were obtained by subtracting each monthly observation from the one preceding it to obtain first differences.

TABLE 2.2. TRENDS IN PRICES OF PETROL IN MALAWI, MOZAMBIQUE AND ZAMBIA, 2000-2009.

Country	Price	Mozambique	Malawi	Zambia	S. Africa
Mozambique	Real prices in local currency	1	.42	.63	.19
	Nominal prices in $	1	.43	.58	.15
Malawi	Real prices in local currency		1	.49	.21
	Nominal prices in $	1	.46	.17	
Zambia	Real prices in local currency			1	.19
	Nominal prices in $		1	.18	
S. Africa	Real prices in local currency				1
	Nominal prices in $			1	

DATA SOURCES: BUREAU OF STATISTICS, MALAWI, MOZAMBIQUE, S. AFRICA AND ZAMBIA.

TABLE 2.3. CORRELATION COEFFICIENTS OF REPORTED MAIZE PRODUCTION AMONG SELECTED SOUTHERN AFRICAN COUNTRIES, 1990-2005.

Country	Period	S. Africa	Zambia	Mozambique	Malawi
S. Africa	1990 - 1999	1.00	0.66**	0.18	0.12
	1996 - 2005	1.00	0.36	0.04	-0.18
Zambia	1990 - 1999		1.00	-0.04	0.36
	1996 - 2005		1.00	-0.08	0.06
Mozambique	1990 - 1999			1.00	0.65**
	1996 - 2005			1.00	-0.20
Malawi	1990 - 1999				1.00
	1996 - 2005				1.00

DATA SOURCES: TSCHIRLEY AND JAYNE 2008.
Notes: The asterisks (**) indicate statistical significance at 5% level.

100%, for Zambia just above 90% and for Mozambique under 90%. On average, a number of countries in the region are net food importers.

In the last decade, correlation coefficients on maize production between Malawi, Mozambique, S. Africa and Zambia were low and none were significant. Tschirley and Jayne (2008) established that country-by-country correlation of maize production did not exceed 0.69 and most were below 0.50 (Table 2.3).

It appears as if the weather patterns in one country are lowly correlated with those in other countries in the region. Within the same season, some countries enjoy good weather and good crop harvests but others experience adverse weather which creates the need for food imports to meet consumption needs. This implies that the region will always have pockets of surplus and deficit every season and that regional flows of food are necessary. This also demonstrates that a regional marketing system really does exist and that it serves to connect the maize markets of the region.

2.4.3 Integration of Southern African Maize Markets with the International Market

Analysis of price transmission by Rapsomanikis (2008) established that domestic maize prices in Malawi, S. Africa and Zambia co-move with the US yellow maize No. 2 Gulf price in the long run. Prices of maize in southern Africa are not affected instantaneously by the US Gulf price changes but the former adjust to the latter, even though at a slow rate.

Rapsomanikis (2008) first tested co-movement between S. African SAFEX spot prices for both yellow and white maize and the US yellow maize No.2 Gulf maize prices using data from January 1998 to July 2008. The results provided strong evidence that there was co-movement in the long run and shocks in the Chicago Board of Trade (CBOT) were passed through to the SAFEX in the long run. Full adjustment of S.

African prices took approximately 7 to 8 months. Therefore, maize futures at SAFEX shared the same underlying long-run trend with the CBOT market. Rapsomanikis (2008) established the direction of causality to run from USA to S. Africa. This meant that S. African players watched CBOT in order to stay competitive internationally, especially against the US, which competed with S. Africa for export markets in the continent. Thus, S. Africa's maize derivative markets adjusted to shocks and reacted to new information from international markets.

Further tests provided evidence that maize prices in major consumption centers in Zambia co-moved with S. African prices. S. Africa was the main source of maize imports into Zambia in case of production shortfalls. [9] In the short run, prices in S. Africa and USA or Argentina did not affect Zambian maize prices directly and instantaneously. Adjustment of Zambian maize prices to world prices was slow and took 3 to 8 months. Large commercial maize producers, traders and processors in Zambia used SAFEX prices as a point of reference in determining domestic prices.

Results in Malawi provided strong evidence that most physical markets in Malawi were integrated with the S. African markets. Like Zambia, Malawi relied mainly on S. Africa for maize imports. It took 5-8 months for the prices in Malawi to fully adjust to a shock in international and S. African maize markets (Rapsomanikis 2008). The direction of causality ran from the international market to Malawi, suggesting that information on international and S. African maize markets was passed on to the Malawi market.

Although co-movement tests were not done for Mozambique, the country imported maize grain and flour every year irrespective of production sufficiency. Major consumption centers of southern Mozambique [10] receive regular supplies of maize and maize flour from S. Africa despite maize surpluses produced in central and northern Mozambique. [11] Maize markets in port towns of Maputo and Beira were expected to adjust to international and S. African market prices relatively faster than

[9] During the 2008/09 marketing season, Zambia imported over 45,000 tons GMO-free white maize from S. Africa.

[10] In the cities of Maputo, Matolo and XaiXai and to a lesser extent Beira.

[11] Formal imports of maize grain and flour from S. Africa average 210,000 annually.

prices in inland physical markets such as Central, Sofala and Inhambane up north. [12] Prices of maize in northern Mozambique were expected to co-move with those in Blantyre and Lilongwe in Malawi.

Available evidence suggested that maize markets of Malawi, Mozambique, S. Africa and Zambia were integrated. Shocks in any one market got transmitted to other markets in the short run. If prices in SAFEX rose due to expanded demand for export maize to Kenya, prices in Malawi, Mozambique and Zambia rose as well. These countries form part of the Southeast Africa maize market shed (Govereh et al. 2008). Because the countries under study share the same market shade, their maize markets are integrated.

In the short run, southern Africa and US Gulf prices moved independently because of incomplete transmission. Several reasons were behind this slow price transmission including (a) short-run border measures such as import tariff reductions and export bans; (b) domestic price stabilization policies, such as stock management; (c) high transfer costs and marketing margins; (d) noncompetitive oligopolistic and collusion behavior among traders and processors; and (e) consumer preference for domestically produced food.

In the long run, the South-East-Africa market shed was integrated with the world maize market. Shocks that occurred in the world market in the past 18 months were gradually transmitted to this marketing shed. The implication is that each domestic market was not controlled by a protected monopoly reacting only to local conditions but was part of a regional market and was controlled by events outside national borders. Likewise, the regional market was also part of the world market and influenced by events outside the region.

[12] Although most of this cross-border trade is informal it averages 136,000 tons every year.

3. Headline and Food Inflation

There is a link between inflation levels and living standards of each population. Changes in consumer prices affect the real income of consumers by changing the quantity and quality of goods purchased and consumed in exchange for the money they have in hand. One of the objectives of national economic managers is not to allow inflation to devour the incomes of consumers and returns of investors. Given the consequences on consumption and investment, any rise in inflation above zero could be considered a failure of economic management. Mild price changes in the range of 1 to 2% are the most benign for any economy. High inflation is a serious economic threat.

Countries with a relatively high inflation suffer an unfavorable balance of trade because of the decline in its price competitiveness in the regional market. High prices mean less scope for regional competition, which subsequently reduces the country's exports and ultimately diminishes its capacity to import. As a result, high rates of inflation destroy the value of investments over time as the private sector becomes indifferent and less willing to invest due to uncertain future profits. With high inflation, the economic conditions can invariably lead to economic stagnation.

Economic managers, therefore, have a duty to protect the purchasing power of consumers. Price developments usually lead to adjustments in wages, rents, social benefits, insurance premiums and other regular payments. The indexing of incomes of the population to price developments is necessary to avoid incomes being devoured.

In this report, changes in general consumer and food prices in the four countries were analyzed. The purpose was to assess the extent to which general consumer and food prices rose during the 2008/09 global food and financial crisis. While analysis of income adjustments during the crisis is necessary to measure the real impacts of price changes on consumption, that additional analysis was not covered in this report.

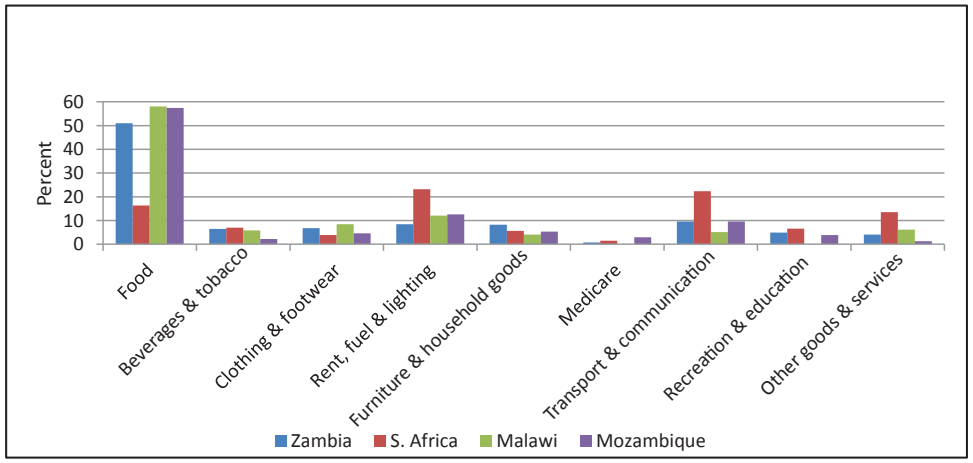

FIGURE 3.1. THE RELATIVE IMPORTANCE OF HEADLINE INFLATION COMPONENTS FOR MALAWI, MOZAMBIQUE, S. AFRICA AND ZAMBIA.

3.1 Headline Consumer Price Index (CPI)

The composition of "headline" CPI, its cumulative index and year-to-year inflation trends were examined. Growth in intra-seasonal price changes was measured to examine if price changes in the 2008/09 marketing season were extraordinary given the crisis in global commodity prices.

3.1.1 The Composition of the Headline CPI

Figure 3.1 shows the composition of headline inflation in the four countries of southern Africa. Food expenditure is a very important category in the budget of a typical consumer in southern Africa. The expenditure weight on food, particularly in Malawi, Mozambique and Zambia, is high. Over 57% of total consumption expenditure in Malawi and Mozambique is spent on food. Consumers in Zambia spend 50% of their expenditure on food. In contrast, only 16% of expenditure of S. African consumers is absorbed by food. Consumers in Malawi, Mozambique and Zambia have relatively low incomes than those in S. Africa and the former spend a disproportionately high share of this income on food.

Apart from food, other important expenditure categories across the four countries are energy/rent and transport (Figure 3.1). These two categories have the highest weight among S. African consumers. Energy is also the second most important category in both Malawi and Mozambique. In Zambia, transport ranks second in importance. Because energy and transport account for over 45% of consumer expenditure in S. Africa and about 20% in the remaining three countries, increases in global energy and transport costs impact substantially on average consumers. Given the significant expenditure weight on energy, countries in the southern region, particularly S. Africa were susceptible to the negative effects of the increases in global fuel prices. While, consumers in S. Africa were more exposed to loud increases in fuel and transport costs, other countries in the region were more exposed to crushing increases in food prices.

3.1.2 Cumulative Monthly Headline CPI

Figure 3.2 shows the cumulative changes in the cost of maintaining a constant standard of living from one year to the next in a number of countries. Prices, on average, have risen every year since 2000. Among the selected four countries, the price level accelerated faster in Zambia, moderately in Malawi and Mozambique and much less in S. Africa. The cumulative effect of this continuous rise in the general price level is staggering. Over the past 10 years, the cumulative monthly inflation rose by 110, 100, 152 and 58% in Malawi, Mozambique, Zambia and S. Africa, respectively.

These differences across countries reveal the different monetary policies these countries pursue and the different levels of exposure to imported price inflation. Several factors such as the printing of money by government, rising production and labor costs, high lending levels, depreciation of the exchange rate, and increased taxes increase headline CPI. [13]

While monetary policy is a principal long-term determinant of inflation, nonmonetary sources, such as an increase in global commodity prices, raise global inflation levels and percolate to domestic economies. The rise in the global price of oil, food, steel and other commodities in 2008 accelerated domestic inflation as these commodities were imported at high prices.

At the same time, wage adjustments to rising inflation bring about second-round effects as high production costs force commercial firms to increase prices to maintain steady profits. Demands for wage increases push inflation further. Even though rising prices are inflationary, they are not the cause of inflation. Rising prices are a reaction to the extra money injected to the economy through expansionary monetary policies. Based on these results, the imbalance between the increase in the quantity of money and increases in output are much more severe in Zambia [14] but less in S. Africa.

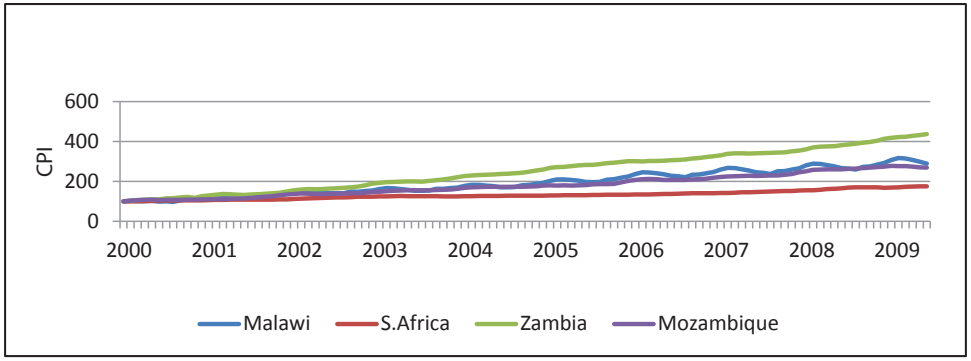

FIGURE 3.2. CONSUMER PRICE LEVELS IN MALAWI, MOZAMBIQUE, S. AFRICA AND ZAMBIA, 2000 (JANUARY 2000 = 100).

[13] Increasing total money stock without any similar accompanying increase in output has a predictable effect on price levels. Even though additional output is stimulated by increased demand, such increases in output are limited by growth in resources. For example, government spending in Zambia has been expanding at a rate of 6% per annum to stimulate the economy and combat unemployment. This expansion imposes high costs on all economic agents by causing persistent inflation.

[14] It should also be noted that the index used in Zambia has an old base of 1994. An overly old base tends to overstate changes in the cost of living (Mpofu, personal communication).

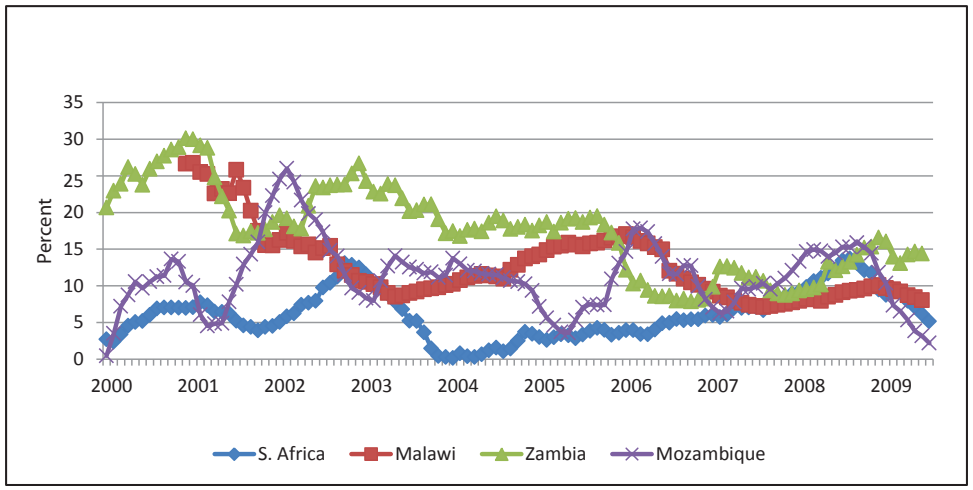

FIGURE 3.3. YEAR-TO-YEAR INFLATION IN MALAWI, MOZAMBIQUE, S. AFRICA AND ZAMBIA, 2000 - 2009.

3.1.3 Year-to-Year Inflation Trends

Figure 3.3 shows periods of upswings and downswings in headline year-to-year inflation. S. Africa's inflation has largely been single digit except for a blip in 2003 and most recently in 2008. The sustained increases in consumer prices between 2002 and 2003 in S. Africa can be attributed to the drought that ravaged the region in the 2001/02 production season. That increase in 2002/03 was followed by a consistent decline to very gentle levels (close to zero) in 2004. This decline occurred during the runup to the general elections. Since April 2004, inflation levels have risen consistently to a record high of 13.7% in August 2008 but declined to nearly 5% by June 2009.

Mozambique's inflation levels exhibited periodic swings and were the most volatile, relative to those in other countries in the region. Large swathes of Mozambique's landscape were regularly ravaged by seasonal floods, which have the effect of pushing food prices, transport costs and house rentals upwards. From 2000 to 2009, inflation levels peaked four times, in October 2000, February 2002, March 2006 and September 2008. The highest inflation level of 26% experienced in February 2002 was due to the limited availability of food following the drought and floods in several parts of the country. A similar occurrence of drought with floods in 2005 even though with less severity was behind the rise in inflation levels in March 2006. The last sustained increase in the general price levels in Mozambique started in February 2007 and lasted until September 2008. Since then, the general price levels have decreased and year-to-year inflation reached an unprecedented low of 2.1% by July 2009.

The inflation trends in Malawi (Figure 3.3) exhibited two troughs in 2003 and 2007 with peaks in 2001 and 2006. Malawi had a high inflation of 26% in January 2001 following a poor harvest in the 2000/01 agricultural season but year-to-year inflation decreased consistently to a low level of 8.5% in May 2003. [15] This sustained decline was due to favorable food prices following a good crop harvest. From 2003, inflation

[15] In 2001, agricultural production was poor due to heavy March rains, dry spells and floods in some areas. The Starter Pack Program was scaled back during that growing season and this led to low input uptake by farmers. Consequently, there was low supply and Malawi had to import food resulting in soaring of food prices. In 2003, the Targeted Input Program and productive safety net programs helped increase production and, subsequently, pull down prices in general.

rose again to 17% by January 2006. Thereafter, the levels declined to 7% in August 2007 but rose again during the crisis of food prices reaching 10% in December 2008. Year-to-year inflation levels declined to 8% by June 2009.

Inflation levels in Zambia are among the highest in the region. Zambia's population is one of the few in the region experiencing double-digit inflation levels. The inflation trends shown in Figure 3.3 have swings with peaks in 2001, 2002, 2007 and most recently in 2008. During the reference period, inflation levels reached a peak of 30% following the drought in the 2000/01 agricultural season. After reaching a low of 17% in September 2001, price levels increased to 27% by December 2002 due to another drought in the 2001/02 agricultural season. In 2003, inflation declined and leveled off at around 17% between February 2004 and March 2005. Thereafter, inflation declined rapidly and even attained single digit levels from March 2006 [16] to January 2007. Following a brief blip, inflation levels again came down to single-digit levels from September 2007 to March 2008. During the 2008 crisis, year-to-year inflation rose steadily to 16% in December 2008 but declined slightly to 14% by June 2009.

Overall, patterns of year-to-year inflation trends reveal that countries in southern Africa encountered increases in inflation during the 2008 crisis but the levels of acceleration were much lower in S. Africa than in other countries. Following the global financial crisis, year-to-year inflation levels in the region continued to increase. However, increases in year-to-year inflation were more prolonged in Zambia than in Mozambique and S. Africa. The general price levels in Mozambique recovered from the 2008 crisis several months earlier than in Malawi and Zambia. By June 2009, inflation levels in Mozambique and S. Africa dipped towards and beyond 5%, respectively.

[16] This was a record achievement considering that Zambia last experienced single digit levels during the early years of Independence.

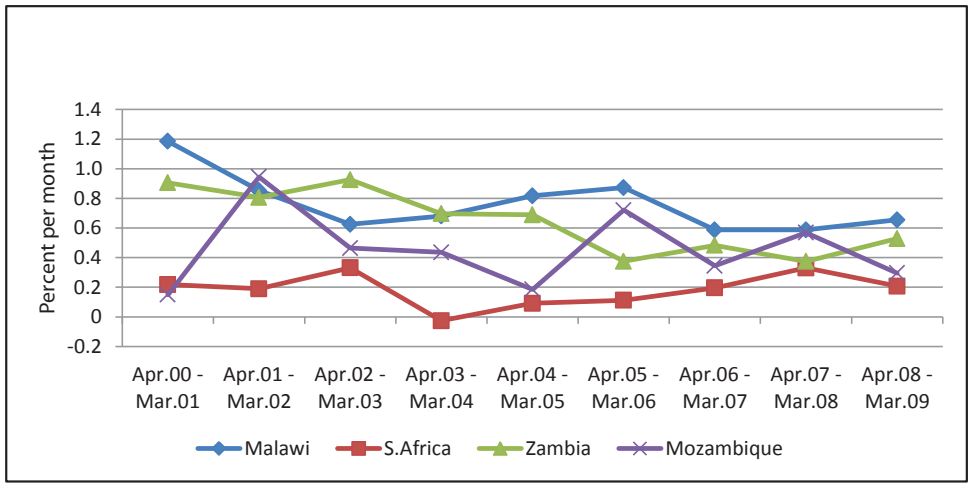

FIGURE 3.4. PERCENT GROWTH IN CPI PER MONTH FOR MALAWI, MOZAMBIQUE, S. AFRICA AND ZAMBIA, APRIL 2000 TO MARCH 2009.

3.1.4 Intra-seasonal Growth in Monthly Headline Inflation

This report analyzed the severity of intra-seasonal general price changes in 2008/09 relative to past seasons. The question to address was whether intra-seasonal price changes in 2008/09 were abnormal compared to what was recorded in the previous ten seasons. To make this assessment, monthly CPI indices were rearranged such that the CPI index in April of each year was made the base with a value of 100. April marked the beginning of the maize harvest in the region and prices were often at their lowest. The subsequent monthly indices were reestimated and the rate of change in monthly CPIs within each season was calculated. Figure 3.4 shows the percent growth in intra-seasonal CPI per month for the four countries.

Growth in monthly intra-seasonal CPI varied across the countries. On average, Malawi and Zambia had relatively high growth rates in monthly consumer prices of 0.76 and 0.64%, respectively. Fortunately, monthly growth in intra-seasonal prices, particularly in Zambia has consistently trended downwards. Meanwhile, monthly consumer prices have grown at a relatively slow rate of 0.18 and 0.48% in S. Africa and Mozambique, respectively.

The growth in monthly consumer prices in S. Africa was the lowest and most stable, hovering around 0.2%. Between March 2003 and March 2007, intra-seasonal CPI grew at a rate below 0.2% per month. The stability in prices during this period can be attributed to relatively good economic management policies. Growth in consumer prices in Mozambique showed relatively unstable inter-seasonal variation. From the 2000-01 season to the 2001-02 season, growth rate in intra-consumer prices shifted from 0.2% per month to nearly 1% per month (Figure 3.4). This sustained growth was due to drought. What followed after the 2001-02 season was a consistent reduction in intra-seasonal consumer prices to 0.2% per month in the 2004-05 season. Intra-seasonal growth in consumer prices peaked again to above 0.6% per month in the 2005-06 season following another drought. Since then, growth in consumer prices

has trended downwards. In both Mozambique and S. Africa, the growth rate in intra-seasonal consumer prices in 2008-09 was less severe than that in 2007-08. This result suggests that, in the 2008-09 season, there was no crisis in generalized consumer prices in Mozambique and S. Africa. The crisis in 2008-09 was probably specific to food in Mozambique and energy and transport in S. Africa.

The growth pattern in intra-seasonal consumer prices in Malawi and Zambia is similar. Monthly growth of intra-seasonal consumer prices in Malawi trended downwards from a peak of nearly 1.2% in the 2000-01 season to 0.6% in the 2007-08 season. Growth in monthly intra-seasonal CPIs in Zambia likewise depict declining trends from above 0.8% in the 2000-01 season to a low of 0.4% in the 2007-08 season. Figure 3.4 shows that, unlike in Mozambique and S. Africa, intra-seasonal consumer prices increased at a faster rate in both Malawi and Zambia during the 2008-09 crisis season than in the 2007-08 season. Being landlocked countries, the pace of passing the increase in global prices to domestic prices in Malawi and Zambia had a lag effect relative to coastal Mozambique and S. Africa where intra-seasonal prices accelerated faster in 2007-08 than in 2008-09.

TABLE 3.1. COMPOSITION OF FOOD CPI IN S. AFRICA AND ZAMBIA.

Food component	S. Africa	Zambia
Grain staples	21.3	37.0
Meats	50.0	30.2
Fruits, vegetables and pulses	14.7	14.6
Oil, sugar and salt	14.0	18.2
Total	100.0	100.0

DATA SOURCES: BUREAU OF STATISTICS, ZAMBIA, MOZAMBIQUE, MALAWI AND S. AFRICA.

TABLE 3.2. THE PROPORTION OF THE VARIANCE (R2) IN FOOD INFLATION ATTRIBUTABLE TO THE VARIANCE IN PRICES OF MAIZE GRAIN AND FLOUR IN MALAWI, MOZAMBIQUE, S. AFRICA AND ZAMBIA.

Product	Lag period (months)	Malawi	Mozambique	S. Africa	Zambia
Grain	0	40.4	4.8	0.3	7
Flour	0	26.7	7.3	0.8	7.4
Grain	1	14.7	18.5	0.3	34
Flour	1	3.3	9.8	2.9	25.1

DATA SOURCES: BUREAU OF STATISTICS, ZAMBIA, MOZAMBIQUE, MALAWI AND S. AFRICA.

3.2 Food Price Index

The report examined the behavior of food prices across the four countries during the crisis relative to past behavior. First, looking at the basic structure or weights of various food components in the food CPI allowed an understanding of the role that cereals play in food consumption across the southern African region. Second, the extent to which variation in food CPI was attributable to variation in maize was evaluated.

3.2.1 Composition of the Food CPI

Table 3.1 shows the basic structure of food CPI and the weight that different food groups occupy in an average consumer basket in S. Africa and Zambia. Grain staples account for a large proportion of household's food CPI in Zambia. In comparison, meat staples account for the largest proportion of the food CPI in S. Africa with grain taking a second major role. Because of relatively higher incomes, S. African consumers appear to consume more meat products than their counterparts in the region.

Which food component was largely responsible for changes in the food CPI was one important question to be addressed. The common intuition was that cereals, particularly maize, were largely responsible for changes in food CPI in southern Africa. An attempt was made to assess whether there has been a strong relationship between maize prices and consumer food prices in the past. How much of the monthly food CPI inflation rate was directly explained by month-to-month movement in maize grain and maize flour prices across the countries?

Results given in Table 3.2 show that the proportion of variance in food inflation in Malawi attributed to the variance in prices of maize grain and flour, that is R2, were 40 and 26%, respectively. In Mozambique and Zambia the proportion of the variance in food inflation attributable to the variance in prices of maize grain and flour was moderate. The results changed when maize prices were lagged by one month. Variance

in prices of maize grain in Mozambique and Zambia for a given month explained by 18 and 34%, respectively, of the variation in food CPI of the following month. In S. Africa, variance in grain and flour prices explained less than 1% of the variance in food prices. Use of lagged grain prices did not influence the result.

Therefore, the relationship between maize prices and the overall CPI cannot be generalized as it varies across countries. The intuition that cereals, particularly maize, are largely responsible for changes in food CPI in southern Africa can clearly be accepted in the case of Malawi, Mozambique and Zambia but is rejected in the case of S. Africa. As explained already, cereals take a slightly lighter weight in the food expenditure basket in S. Africa.

3.2.2 Cumulative Monthly Food CPI Trends

Consumer food prices in the region have been relatively unstable over the last decade. Monthly cumulative increases in food price levels shown in Figure 3.5 reveal that food CPI index quadrupled in Zambia, trebled in Mozambique and doubled in Malawi and S. Africa. Unless the incomes of consumers in the region are indexed to these price changes, their purchasing power will erode rapidly.

The pattern in Malawi exhibits very distinct cycles of peaks at the beginning of the calendar year and troughs occurring mid-year. This is a symptom of high seasonal price variability. [17] Zambian trends show a step-wise pattern where prices are stable in the first half of the calendar year but increase in the latter half. Trends in the monthly cumulative food index in Mozambique show a cyclical pattern but with a very low amplitude relative to Malawi. S. African cumulative trends doubled during this past decade but in contrast, there is no visible cyclical pattern in these trends.

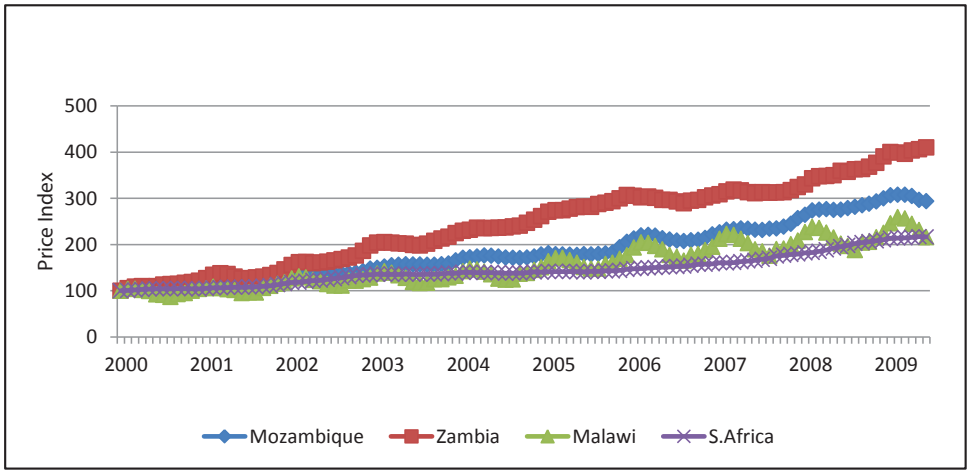

FIGURE 3.5. TRENDS IN FOOD PRICE INDEX FOR MALAWI, MOZAMBIQUE, S. AFRICA AND ZAMBIA, 2000-2009 (2000 = 100).

[17] Government of Malawi operates a National Food Reserve Agency. Despite its operations, price volatility appears high by regional standards. Additional investment in storage, particularly by the private sector and public transport infrastructure could reduce the cyclical price patterns. The response to price changes and market opportunities in the region is very slow due to red tape.

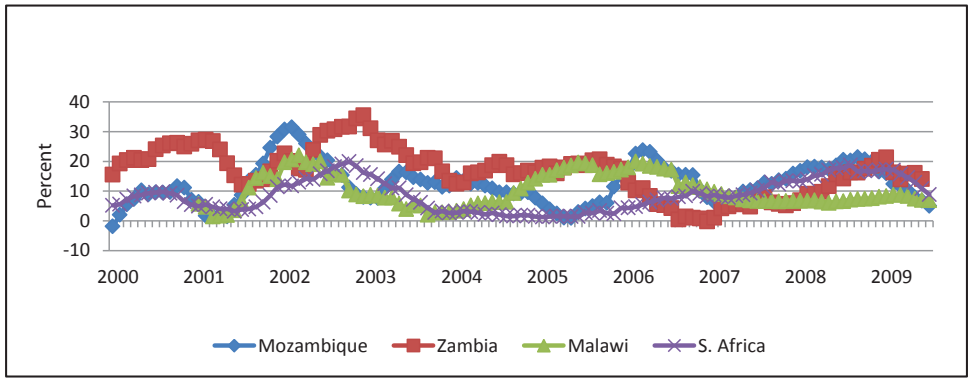

FIGURE 3.6. YEAR TO YEAR INFLATION OF FOOD PRICES IN MALAWI, MOZAMBIQUE, SOUTH AFRICA AND ZAMBIA, 2000 TO 2009.

This smooth rise in the food price index in S. Africa is a reflection of the food marketing and trade policies obtaining there. Open borders and large investments by the private sector in domestic marketing and storage activities are the forces behind the smooth movement of food price levels in S. Africa.

3.2.3 Year-to-Year Food Inflation Trends

Figure 3.6 shows the year-to-year food price inflation in the four countries. In Zambia, food inflation peaked at 27 and 35% in 2001 and 2003, respectively, but then fell drastically to 0% in 2007. These early peaks were associated with the 2-year drought in 2001 and 2002. Since February 2007, food inflation in Zambia has increased aggressively and reached 20% in January 2009 before tapering off. The sustained rise in food inflation during the global crisis in commodity prices failed to match the levels attained in 2003 following the drought. What is peculiar in the case of Zambia was the prolonged (24 months) period within which food inflation continued to rise. By June 2009, food inflation had dropped to 13%.

Although inflation of annual food prices in Mozambique peaked at 32, 24 and 22% in 2002, 2006 and 2008, respectively, it dropped to levels near zero in 2001 and 2005. Notably, the food inflation levels in 2008/09 were lower in comparison to the levels in 2002 and 2006 but the period through which prices increased continuously was much longer (18 months) than in the previous cycles of 2002 and 2006. By June 2009, inflation of food prices had declined to 5%.

During the last decade, inflation of annual food prices in Malawi peaked at 21 and 20% in 2002 and 2006, respectively. But inflation levels of food prices also went under 5% in 2001 and 2003. Inflation levels of annual food prices from 2007 to 2009 exhibited a very uncharacteristic pattern. Since attaining the last peak in January 2006, inflation of annual food prices decreased for an unprecedented spell of 28 months to about 5% in May 2008 and remained under 8% past June 2009. This pattern is a reflection of

the policy interventions and market conditions that prevailed in Malawi during that period. [18]

Of the four countries being analyzed, S. Africa enjoyed the lowest annual inflation levels of food prices throughout the past decade. Prior to the recent crisis in food prices, inflation of food prices peaked only once (to 20%) in September 2002 following the regional drought. What is also notable is that S. Africa experienced long (24 months) spells with inflation levels of food prices below 5% from October 2003 to December 2005. Most recently, S. Africa had an equally long spell of small but sustained increases in annual inflation of food prices. Inflation levels of food prices rose continuously from 3% in October 2005 to 18% in August 2008. This long duration of sustained price increases is what characterized the food crisis in S. Africa.

3.2.4 Intra-seasonal Growth in Monthly Food Price Indices

In this study, the acceleration of food prices within each marketing season was measured. Given that food prices are lowest immediately after harvest, the study measured the acceleration of the food price index from the beginning to the end of each marketing season. Figure 3.6 shows the percent growth in food price index per month for each season from 2000-01 to 2008-09 marketing seasons.

The intra-seasonal pattern of acceleration of food prices for Mozambique exhibited significant fluctuations from one season to the next. The 2001-02 (1.2% per month) and 2005-06 (1% per month) marketing seasons had exceptionally high acceleration in prices. In contrast, intra-seasonal food price index changed minimally in the 2000-01 and 2004-05 seasons. During the global crisis in commodity prices of 2008-09, intra-seasonal food CPI accelerated at a slower pace relative to the 2007-08 season. Though the absolute food price levels in the 2008-09 marketing season were high, the price swing within the season was moderate.

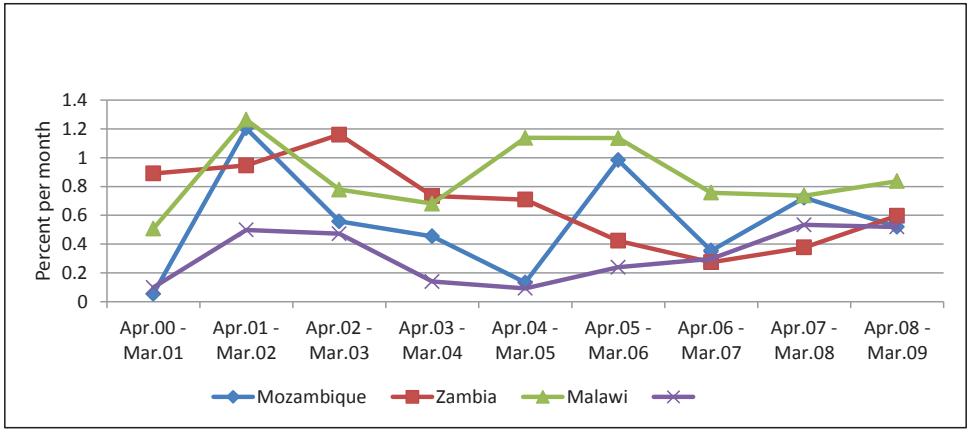

FIGURE 3.7. PERCENT GROWTH IN FOOD PRICE INDEX PER MONTH FOR MALAWI, MOZAMBIQUE, S. AFRICA AND ZAMBIA, 2000 TO 2009.

[18] Malawi authorities imposed maize price controls in the form of a fixed price band.

Malawi also had a peak intra-seasonal swing in the food price indices during 2001-02, 2003-04 and 2005-06 marketing seasons. But during the last three marketing seasons, the swings were relatively low by Malawi standards. Further, the intra-seasonal swings in the food price indices observed in Malawi over the last six marketing seasons were the highest among the selected group of countries. This can possibly be explained by the thinness of Malawi's food markets, its limited investment in food storage and its landlocked geography. But the intra-seasonal swings in 2007-08 and 2008-09 were much lower than what was observed in the 2001-02 and 2004-05 seasons giving credence to the earlier result that the food crisis in Malawi was not as severe as unthinkingly perceived.

The intra-seasonal swings in the food price index in Zambia exhibited declining trends for the period analyzed. The highest swings were experienced during the 2002-03 marketing season following the drought in the 2001-02 production season. These swings have consistently declined and reached the lowest levels of 0.27% per month in the 2006-07 marketing season. The amplitude of the intra-seasonal swings in the food price index increased modestly in the last two seasons. Again, the intra-seasonal swings in 2008-09 were much lower than those in earlier seasons.

Swings in the intra-seasonal food price index in S. Africa exhibited the lowest amplitude during much of the past decade across the region. The food price index swings during the last two marketing seasons match what was observed in the 2001-02 and 2003-04 marketing seasons. The stability of intra- and inter-seasonal food prices in S. Africa is a reflection of the organizational structure and performance of its food markets. Though low by regional standards, the intra-seasonal swings in 2008-09 were the highest that S. Africa experienced in the last decade.

4. Seasonal Variations in Maize Prices

In the previous chapter, increases in the commodity prices in southern Africa focused on headline CPI and food CPI. In this chapter, maize prices in the four countries are analyzed. As noted previously, maize constitutes the largest share of the cereal basket among households in the region. The issue at hand is to examine the extent to which maize prices rose during the period of the crisis. The extent of this price increase was a measure of the level of hunger threat households in the region were exposed to.

TABLE 4.1. FLUCTUATIONS IN MONTHLY NOMINAL PRICES OF MAIZE GRAIN IN MALAWI, MOZAMBIQUE, S. AFRICA, USA AND ZAMBIA.

Marketing season	S. Africa	Mozambique	Zambia	Malawi	USA
	Difference between highest and lowest index numbers				
2000-2001	57	31	55	80	27
2001-2002	160	177	268	302	13
2002-2003	56	61	82	54	20
2003-2004	58	60	53	45	31
2004-2005	49	28	67	74	23
2005-2006	92	220	77	184	16
2006-2007	55	18	33	60	64
2007-2008	13	77	64	142	60
2008-2009	20	113	76	124	46
Average	62	87	86	118	33
Average excluding 2001/02	50	76	64	95	36
Average excluding 2001/02 and 2008/09	54	71	62	91	35
			Coefficient of variation		
Marketing season	S. Africa	Mozambique	Zambia	Malawi	USA
2000-2001	0.18	0.08	0.17	0.24	0.08
2001-2002	0.33	0.28	0.41	0.40	0.03
2002-2003	0.27	0.15	0.21	0.17	0.05
2003-2004	0.17	0.14	0.13	0.13	0.10
2004-2005	0.24	0.08	0.16	0.20	0.08
2005-2006	0.24	0.41	0.20	0.40	0.05
2006-2007	0.14	0.05	0.11	0.20	0.17
2007-2008	0.04	0.18	0.18	0.31	0.18
2008-2009	0.07	0.27	0.21	0.37	0.23
Average	0.19	0.18	0.20	0.27	0.11
Average excluding 2001/02	0.17	0.17	0.17	0.25	0.12
Average excluding 2001/02 and 2008/09	0.20	0.19	0.20	0.26	0.09

DATA SOURCES: BUREAU OF STATISTICS, MALAWI, MOZAMBIQUE, S. AFRICA AND ZAMBIA.

4.1 Severity of Fluctuations in Maize Prices

Two indicators measuring the extent of fluctuations in price were adopted in this section. The first indicator measured the difference between the lowest and highest monthly price indices within a given marketing season. For this analysis, the June price was chosen as the base, and was set equal to 100. The second indicator of price fluctuation was the coefficient of variation, defined as the standard deviation of the monthly prices in a year divided by the average price.

Results in Table 4.1 show that monthly price fluctuations were severe in the 2001-02 and 2005-06 seasons because of droughts and floods. Monthly nominal price fluctuations in the 2001-02 season exceeded 150% in all the four countries compared to only a 13% fluctuation in US Gulf prices. In Zambia and Malawi, nominal price fluctuations were severe and exceeded 260 and 300%, respectively. During the 2008-09 price episode, monthly price fluctuations were more than 100% in Malawi and Mozambique. Zambia recorded a swing of 76%. In contrast, neighboring S. Africa experienced a modest 20% fluctuation in maize prices. The price of maize grain in S. Africa was even more stable than the global market price in the 2008-09 marketing season.

The second measure of instability in seasonal prices is the coefficient of variation. According to Table 4.1, the seasonal variation in maize prices was most pronounced in Malawi and Mozambique. The coefficient of variation of monthly maize prices only exceeded 20% in 1 out of 8 years in USA. But in Malawi, variation exceeded 20% in five out of the past eight marketing seasons. In S. Africa, variation exceeded 20% in three out of the past eight marketing seasons.

The price fluctuations in 2008-09 were not as severe as in 2001-02 because the recent crisis was not weather-related. Despite having normal harvests in the region, several countries experienced price fluctuations suggestive of the past drought seasons.

While Mozambique's trade policies are relatively open, maize production has stagnated. Malawi has avoided year-to-year swings but intra-seasonal fluctuations are exceedingly high because of trade restrictions and limited investment in marketing infrastructure.

4.2 Inter-year Fluctuations in Maize Prices

Although price instability is a general feature of agricultural markets, year-to-year fluctuations in nominal prices are generally high in the region. According to Table 4.2, year-to-year fluctuations greater than 25% occurred in two out of the past eight seasons in the USA as compared with six out of eight in Zambia and four out of eight in Mozambique. The fluctuations were most severe in 2001-02 due to severe maize shortages caused by drought-related production shortfalls throughout the region. During that drought period, year-to-year prices increased by more than 100% across the region. Malawi recorded the highest inter-year fluctuation of 183% because of shortages of foreign exchange for government maize imports. This could also be due to the inability to use the Strategic Grain Reserve appropriately.

The 2005-06 marketing season followed another drought production season. Although this was a mild drought inter-year prices fluctuated greatly. In the 2005/06 marketing season, Mozambique recorded the highest inter-year swing (77%) in nominal prices as supplies were further disrupted by floods.

When compared with past marketing seasons, the inter-year fluctuations in maize prices from 2007-08 to 2008-09 were not uncommon. While inter-year 2008-09 prices increased by 80 and 48% in Mozambique and Zambia, respectively, Malawi and S. Africa enjoyed a great degree of stability in the inter-year maize prices [19] (less than 0%).

In order to distinguish between trend and random elements of fluctuation in maize prices, trends were calculated using a 3-year centered moving average. Table 4.2 shows that deviations were less than 10% in 7 out of 8 years in the USA. But deviations were much larger in the southern Africa region. Deviations were less than 10% in only 4 out of 8 years in S. Africa, 2 out of 8 in Mozambique and Zambia and 3 out of 8 in Malawi. In the 2008-09 season, prices veered off the trend in Mozambique and Zambia but stayed on trend in Malawi and S. Africa. Thus by several measures, inter-year variation of the maize grain in S. Africa and Malawi displayed greater degree of stability during the price crisis episode than in Mozambique and Zambia.

[19] Year-to-year fluctuations in maize prices in Malawi were marginal because government temporarily banned maize traders from operating.

TABLE 4.2. FLUCTUATIONS IN ANNUAL NOMINAL MAIZE GRAIN PRICES FOR MALAWI, MOZAMBIQUE, S. AFRICA, USA AND ZAMBIA. FOR 2000/01 TO 2008/09.

Marketing season	Actual annual price	Changes from previous year (%)	3-year moving average	Deviation of actual price from moving average (%)
S. Africa (Rand/ton)				
2000-2001	683			
2001-2002	1,399	104.9	1,181	18.4
2002-2003	1,463	4.6	1,293	13.1
2003-2004	1,019	-30.4	1,086	-6.2
2004-2005	775	-23.9	898	-13.7
2005-2006	900	16.1	1,044	-13.8
2006-2007	1,456	61.8	1,385	5.1
2007-2008	1,800	23.6	1,680	7.1
2008-2009	1,785	-0.9	1,792	-0.4
				Mozambique (meticais/ton)
2000-2001	1,936			
2001-2002	3,877	100.2	3,388	14.4
2002-2003	4,352	12.2	4,228	2.9
2003-2004	4,456	2.4	4,271	4.3
2004-2005	4,006	-10.1	5,188	-22.8
2005-2006	7,102	77.3	5,382	32.0
2006-2007	5,037	29.1	6,230	-19.1
2007-2008	6,550	30.0	7,836	-16.4
2008-2009	11,921	82.0	9,235	29.1
				Zambia (kwacha/ton)
2000-2001	336,374			
2001-2002	769,687	128.8	705,970	9.0
2002-2003	1,011,848	31.5	834,938	21.2
2003-2004	723,278	-28.5	832,540	-13.1
2004-2005	762,495	5.4	854,830	-10.8
2005-2006	1,078,717	41.5	878,347	22.8
2006-2007	793,828	-26.4	941,035	-15.6
2007-2008	950,561	19.7	1,050,843	-9.5
2008-2009	1,408,141	48.1	1,179,351	19.4

					Malawi (kwacha/ton)
2000-2001		7,573			
2001-2002		21,379	182.3	14,728	45.2
2002-2003		15,232	-28.8	16,226	-6.1
2003-2004	12,068	-20.8	13,806	-12.6	
2004-2005	14,118	17.0	16,415	-14.0	
2005-2006	23,060	63.3	18,609	23.9	
2006-2007	18,649	-19.1	21,593	-13.6	
2007-2008	23,070	23.7	21,578	6.9	
2008-2009	23,016	-0.2	23,043	-0.1	
					US Gulf F.O.B ($/ton)
2000-2001	88				
2001-2002	91	3.6	95	-4.5	
2002-2003	107	17.8	104	2.6	
2003-2004	115	7.4	107	7.2	
2004-2005	100	-13.3	106	-5.9	
2005-2006	103	3.7	117	-11.5	
2006-2007	147	42.5	150	-1.6	
2007-2008	199	34.6	183	8.5	
2008-2009	203	2.2	201	1.1	

DATA SOURCES: BUREAU OF STATISTICS, MALAWI, MOZAMBIQUE, S. AFRICA AND ZAMBIA.

4.3 Seasonal Patterns in Prices of Maize Grains

Maize production in the region is wholly rain-fed. There is largely one harvest which takes place from April to June of each year. Despite a seasonal supply, consumption is not seasonal. This combination results in a seasonal price pattern. Prices of maize fall immediately after the harvest and rise thereafter until the next harvest as farmers and merchants store some supplies to meet consumer demand throughout the year. The seasonal rise of prices covers the cost of storage which consists of interest charges on working capital tied up in stocks, provision for commodity losses, the cost of labor and facilities used in storage, and normal profits.

This report compared the "normal" seasonal maize grain price movement from the beginning of the marketing season to the end with the price pattern exhibited during the May 2008 to April 2009 episode. Only normal seasons between 2001-02 and 2007-08 were selected in coming up with an average pattern. The standard seasonal movements in grain prices for each of the four countries are shown in Figure 4.1.

According to Figure, 4.1, grain prices in Malawi, S. Africa and Zambia declined from April to May leveling off in June before beginning the seasonal rise up to the end of March the following year. In Mozambique, grain prices began declining in March.

Table 4.3 shows that in normal seasons, grain prices in the region were at the lowest levels between June and August and reached their peak in January and February. Maize harvest reached their lowest levels in July and August in Zambia and Malawi, respectively. The month with the peak price was February for both Malawi and Zambia. The price range within a normal season was widest (70%) in Malawi and Zambia but narrowest (21%) in S. Africa. In a normal average season in Mozambique, retail maize prices rose by 56% with a minimum in June and maximum in January.

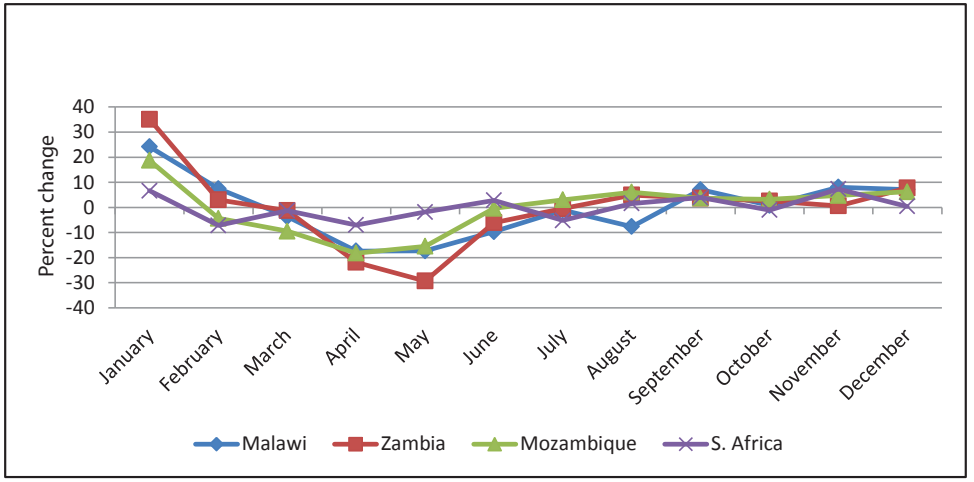

FIGURE 4.1. AVERAGE MONTH TO MONTH CHANGES IN RETAIL MAIZE PRICES IN MALAWI, MOZAMBIQUE, S. AFRICA AND ZAMBIA.

TABLE 4.3. SEASONAL PRICE VARIATION IN NORMAL PRODUCTION SEASONS IN SELECTED COUNTRIES IN THE SOUTHERN AFRICA REGION.

Country	Month with the lowest price	Month with the highest price	Price range (%)
Malawi	August	February	70.4
Mozambique	June	January	56.5
South Africa	July	January	20.9
Zambia	July	February	70.1

DATA SOURCES: BUREAU OF STATISTICS, MALAWI, MOZAMBIQUE, S. AFRICA AND ZAMBIA.

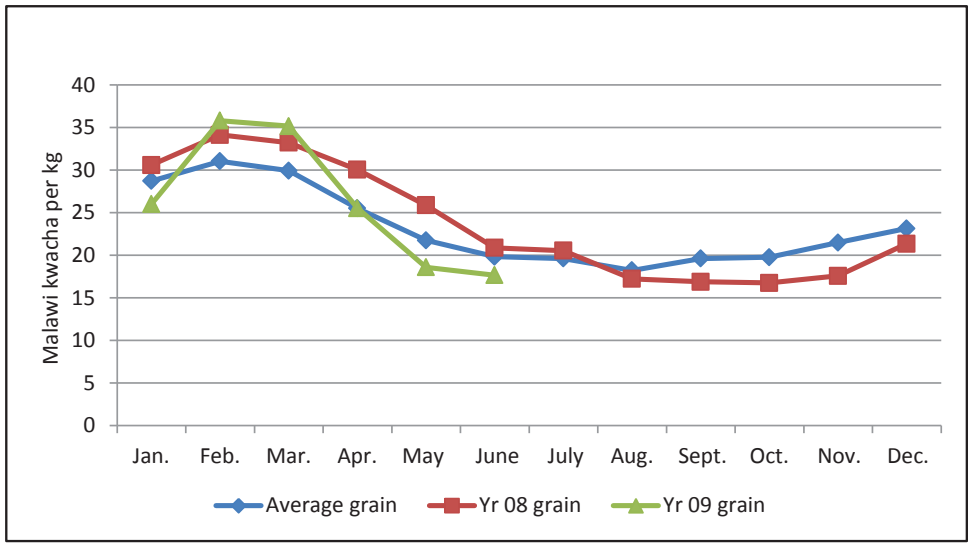

FIGURE 4.2A. AVERAGE SEASONAL RETAIL MAIZE GRAIN PRICES IN MALAWI.

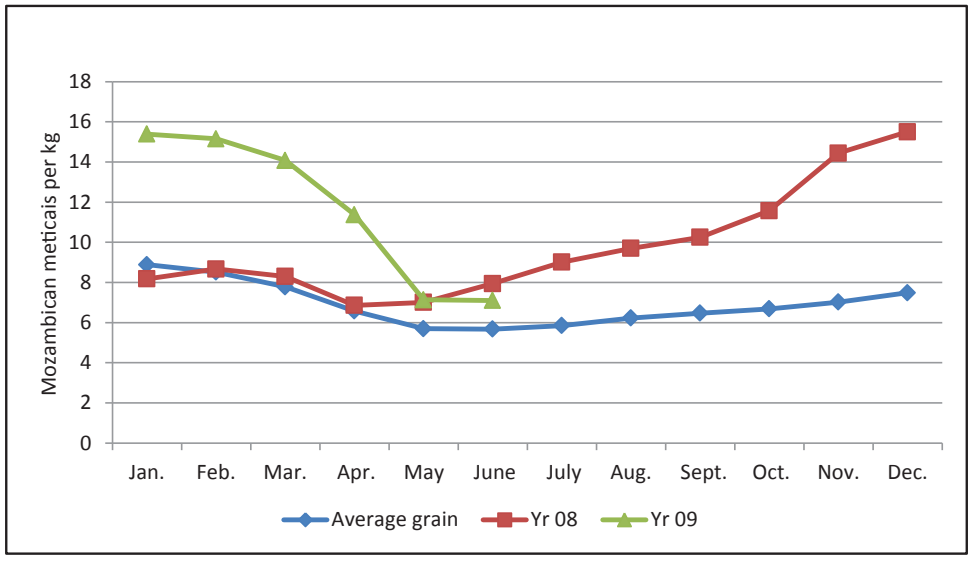

FIGURE 4.2B. AVERAGE SEASONAL RETAIL MAIZE GRAIN PRICES IN MOZAMBIQUE.

4.4 Seasonal Prices of Maize Grains during the 2008/09 Episode

One important question is whether prices of maize grains in the period of crisis were atypical. Monthly prices of maize grains in the 2008 and 2009 calendar years were compared with the normal seasonal price pattern to identify the extent to which the food prices in the period of crisis deviated from the normal path. This analysis was done using real prices rather than nominal prices. Figures 4.2a, b, c, and d show the seasonal prices of maize grains in Malawi, Mozambique, S. Africa and Zambia respectively.

In Malawi, prices of maize grains were marginally above average from January to June 2008 (Figure 4.2a). When this became evident, government introduced drastic price control measures. From August 2008 to January 2009, maize prices slid below the average. Prices of maize grains moved slightly above average during the peak hungry season of February to March 2009 but declined to below average following the harvest in April 2009.

In Zambia, 2008 real prices of maize grains were unexpectedly below average from January to July. Any pressures felt during this earlier part of the year were induced by inflationary forces. Figure 4.2d suggests that the crisis in maize prices set in after August 2008 as prices moved above average levels. The Zambian authorities intervened in the maize meal market by providing subsidized maize to millers from January to March 2009. Results showed that maize prices during this intervention period were reduced to levels below average. When the government of Zambia ended these interventions, grain prices hovered slightly above average from May to June 2009. The pressure on prices was softened but not completely eliminated during the early part of the 2009 calendar year.

Figure 4.2b clearly shows that, in Mozambique, maize prices in 2008 veered more and more above average as the 2008 calendar year progressed. The Government of Mozambique allowed this price shock to be absorbed unhindered by consumers. In 2009, the pressure remained but softened after the new harvest in April 2009. It is also clear that prices in 2009

have remained above average and the crisis is still in effect albeit with less vigor than in the last half of 2008.

For S. Africa (Figure 4.2c), prices of maize grains were clearly above average from January 2008 up till July 2009. What is interesting is that the 2008 prices were well above average, but the market prices were low in absolute terms. This means that the level of shock was not severe. The government of S. Africa allowed this minor shock to be absorbed fully by consumers.

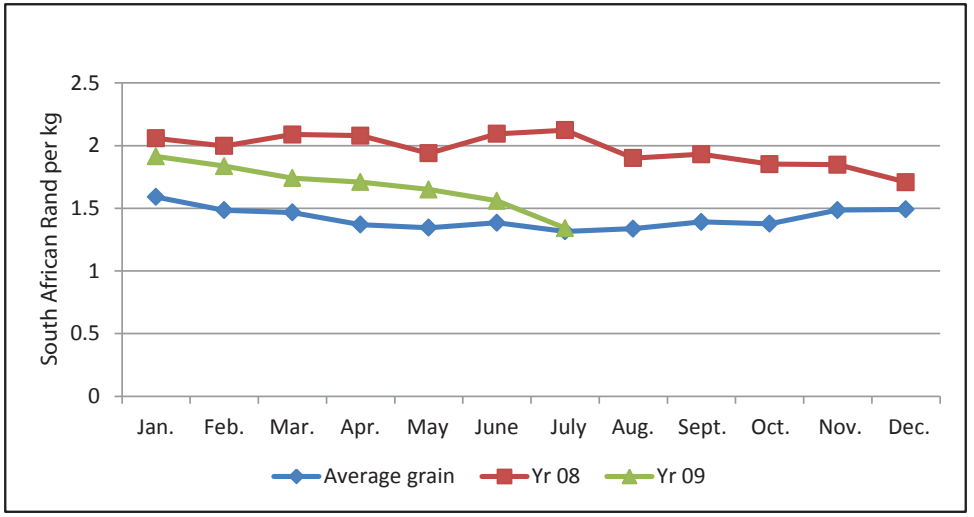

FIGURE 4.2C. AVERAGE SEASONAL RETAIL MAIZE GRAIN PRICES IN SOUTH AFRICA.

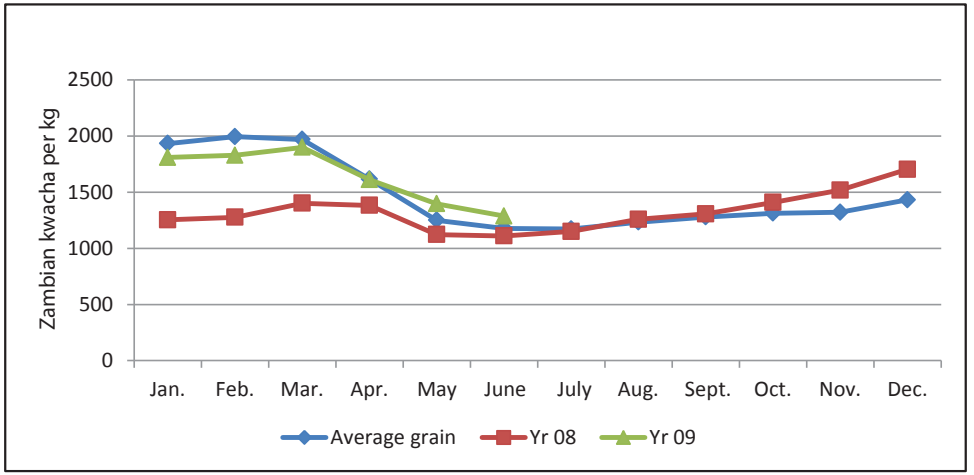

FIGURE 4.2D. AVERAGE SEASONAL RETAIL MAIZE GRAIN PRICES IN ZAMBIA.

5. Impacts of Increases in Food Prices on Various Population Segments

Increases in food prices have affected both consumers and producers through many avenues. Consumers in southern Africa faced a threat in terms of managing a large and increasing food consumption bill. Assuming producer prices were also increasing producers' surplus, then producers in rural areas were presented with an opportunity to improve their livelihoods. Identifying the population groups that were made vulnerable or had the livelihoods improved by increases in food prices was critical in targeting policy interventions. To be effective, policies and programs need to be targeted toward the neediest. How were urban and rural households affected by rising prices?

5.1 Vulnerable Population Groups

There was a tendency to think of this crisis of vulnerability simply as an urban problem because the price hikes were greatest on commodities urban populations exclusively procure from the market. Increases in food prices generated potential benefits for surplus food producers. Farmers could benefit from soaring food prices if farm gate prices increased following an increase in retail prices. In general, urban householders were buyers of net staple food lost, as they had to pay more to maintain adequate diets. Regardless of the circumstances, increases in food prices increased the expenditure of food in all households. The impact of these increases differed with the different circumstances of various households.

To the extent that these higher prices were transmitted to rural markets, the vulnerability was greater for net food purchasers in rural areas than in urban areas. In southern Africa, there is a large share of net buyers of food among rural households. Soaring prices were important for rural as well as urban households. Most rural households in drought-prone areas were most likely to be net buyers of maize on a regular basis. According to Tschirley and Jayne (2008), 71% of rural households in southern Mozambique were net buyers of maize in the 2001/02 marketing season compared to 50% in the surplus north. Over 50% of the households in southern Zambia were net buyers in 2004 compared to 20% in the north.

In general, soaring prices had the most serious effect on the economic and livelihood condition of the poorest who could afford the least. According to Engel's Law, food security was a serious problem for the poor alone because they devoted a high percentage of their income to food.

The full impact on consumer's financial condition eventually spread to nonfood expenditures. Reduced availability and affordability of food compromised health, education, maternal well-being and many other social indicators as well as the capacity to earn a living (UNCTAD 2008). The crisis in food prices also generated crucial gender effects. The impacts were most

likely to impact disproportionately on women and girls who were often the last fed in poor households (UNCTAD 2008).

Empirical research by FAO examined the impact of an increase in the price of maize on consumption, expenditure on household food and poverty in Malawi and Zambia. The analysis was based on food demand system models that were estimated utilizing past household survey data sets. This examination did not attempt to simulate an increase on prices for all food items due to the lack of specific information on prices of foods that were locally produced. Instead, the impact of an increase in maize prices by 50% was examined. Clearly, the results underestimate the impact on consumption of increased food prices. Furthermore, the results pertained only in the short run as income adjustments were not considered and increases in supply in response to higher prices were also not incorporated in the analysis.

The impact of increases in food prices on households depended on four factors, namely, share of food in total expenditure, location of consumer, contribution of agricultural activities in total income, landownership and gender. Households were classified as poor and nonpoor and further divided into rural and urban locations. Poor rural households were stratified according to landownership, gender and the share of income from all agricultural activities. Rural nonpoor households were divided according to the share of income from all agricultural activities. Rural income diversification influenced the degree of vulnerability to spikes in food prices.

5.2 Role of Agricultural Income

Nonpoor households in southern Africa had a more diversified income base and had approximately three times more per capita income than poor households. The former had more capacity to alleviate the impacts of rising food prices. Half of the income of poor households was generated from activities in the agriculture sector. Amongst the poor, female-headed landless households and those households dependent on agricultural

income had the least income per capita. [20] These categories of poor households were the most vulnerable and needed to be targeted with assistance.

Although the majority of the population especially in poor households were engaged in agriculture, evidence suggests that a significant share of those engaged in agriculture were net food purchasers. Higher prices were an opportunity to a disproportionately smaller proportion of food producers who could manage a surplus.

Overall, higher food prices could not benefit the urban householders as the bulk of their income was derived outside agriculture. Among the urban poor in Malawi and Mozambique, a significant share of income was from agriculture. This indicates that food production in urban areas among poor households provided a shock absorber when food prices soared. Urban households in S. Africa and Zambia did not have an opportunity to reduce the shock in food prices through own food production.

In Mozambique, about 52% of the food consumed was from own production. Food purchases were 45% of total food acquired. In rural areas of Mozambique, 73% of food expenditure is from own production compared with 17% in urban areas. For both poor and nonpoor households in Malawi, about 60% of the maize consumed was from own production. In Zambia, 48% of the food acquired by poor households and 34% of food acquired by nonpoor households were from own production. In urban areas of Zambia, the poor produced 10% of the food they acquired. Own production of the main staple crop mitigated the impact of higher food prices. The higher the share of food acquired from own production the fewer the households affected by increases in market prices for food. However, the urban poor produced only 21% of the maize they consumed in Malawi and 10% of the food they acquired in Zambia. Because of the heavy reliance on the market to source food, the urban poor remained the most exposed to negative impacts of increases in food prices.

[20] In Malawi, over 83% of the total income for poor households was from agriculture compared to 70% among nonpoor households. In Zambia, agricultural income was 32% of total income for poor households. For nonpoor households, agricultural income was 23% of total income. Among the bottom income quintile in Mozambique, the share of agriculture in total income was 81% and for the top income quintile, income from agriculture was only 49% (Mather et al. 2008).

TABLE 5.1. ROLE OF MAIZE, WHEAT, RICE AND CASSAVA IN CONSUMPTION, MALAWI, MOZAMBIQUE AND ZAMBIA.

Urban center/country	Year	Share of crop in total value of staples consumption (%)				Share in total consumption (%)
		Maize	Wheat	Rice	Cassava	
Malawi (urban and rural)	2004/05	83.1	5.0	5.5	6.4	42.1
Maputo (urban)	1996	2.6	50.7	35.0	11.7	42.8
	2002	8.9	57.4	28.9	4.8	27.0
Urban northern Mozambique	2002	32.6	8.2	14.7	44.4	47.5
Lusaka, Zambia	2007/08	39.0	49.4	10.7	0.9	19.5
Kitwe, Zambia	2007/08	42.5	45.3	10.3	2.0	23.2
Mansa, Zambia	2007/08	45.8	28.2	10.0	16.0	23.8

DATA SOURCE: MASON ET AL. 2009.

5.3 Weight of Food in Consumption Expenditures

In Malawi, Mozambique and Zambia, the share of total consumption expenditure devoted to food was 67, 54 and 61%, respectively. According to Engel's Law, the share of food expenditure in total expenditure decreased with income. In S. Africa, food expenditure constituted 75% of income among the low-income groups but only 18% among high-income groups. In Mozambique, the lowest income decile spent 81% of total consumption on food but the top decile spent 43%.

In terms of food groups, cereals took the largest share of total expenditure on food, particularly among low-income groups. [21] In S. Africa, high-income urban households spent 24-26% of food expenditure on grains while low-income rural households spent 37%. [22] In Zambia, nonpoor households spent 25% and the poor 30% of food expenditure on cereals. In Malawi, the poor spent 44% and the nonpoor 31% of total expenditure on cereals. For Mozambique, the cereals group was the most important food group in providing proteins and carbohydrates. About 49% of the total energy consumption, 59% of carbohydrates and 44% of protein were from cereals and cereal products. Roots and tubers provided 17% of total energy and 23% of the carbohydrates and 5% of protein in Mozambique.

The actual roles that individual staple commodities play in consumption are shown in Table 5.1. Results of a food consumption survey in the region revealed that the share of expenditure on total food consumption that maize, wheat, rice and cassava occupied was 42% in Malawi, 47% in urban Mozambique and 23% in urban Zambia (Table 5.1). Wheat was found to be the dominant staple food in Maputo followed by rice. For urban consumers of Malawi and Zambia, maize was the dominant staple food although wheat was also important in Zambia.

[21] The statistics here are based on the Living Conditions Survey in Zambia and Malawi and on studies by Bopape and Myers (2007) and Agbola et al. (2003) in S. Africa and by Mather et al. (2008) in Mozambique.

[22] In S. Africa, meats dominated food expenditure on average.

In terms of quantity of food consumed, Malawi households consume nearly equal quantities of cereals, roots and tubers. Poor households consume 135 kg/capita/yr of maize and 114 kg/capita/yr of roots and tubers (Table 5.2). The nonpoor consume 189 kg/capita/yr of maize and 203 kg/capita/yr of roots and tubers. In value terms, maize took up 41% of the share of expenditure on consumption among the poor and 25% among the nonpoor. Other cereals were less important as they took up less than 7% of the corresponding share.

Southern Africa produces a range of cereals including maize, millet, rice and sorghum. In the typical diet of households in the region, maize is the main cereal for lunch and supper (Chirwa 2009). A few households without access to maize opt for sorghum, rice or millet as the main staple.

Table 5.2 shows that the per capita/year consumption of maize, other cereals, cassava and other roots and tubers was lowest among urban poor in Zambia. Poor households in Malawi consumed 135 kg/capita/year of maize and 114 kg/capita/year of roots and tubers while the nonpoor consumed 189 kg/capita/year of maize and 203 kg/capita/year of roots and tubers. The consumption of lower quantities of carbohydrates, proteins and vitamins exposed the poor to food deprivation. While food deprivation existed among the poor prior to the increases in food prices, this worsened with higher food prices.

TABLE 5.2. OBSERVED CEREAL CONSUMPTION BY FOOD SECURITY CATEGORY AND SIMULATION RESULTS OF CHANGES IN QUANTITY CONSUMED FOLLOWING AN INCREASE IN MAIZE PRICES IN MALAWI AND ZAMBIA.

Commodities	Nonpoor		Poor		Urban poor	
	Malawi	Zambia	Malawi	Zambia	Malawi	Zambia
	Quantities consumed (kg/capita/yr)					
Maize	189	151	135	150	128	63
Other cereals	17	116	4	50	6	56
Cassava	100	49	68	43	71	9
Other root crops	102	48	46	33	48	31
	Consumption shares (%)					
Maize	.25	.14	.41	.21	.36	.09
Other cereals	.07	.11	.03	.09	.06	.10
Cassava	.02	.04	.03	.06	.03	.01
Other root crops	.02	.03	.02	.04	.02	.04
	% changes in quantities consumed following a 50% increase in maize Prices					
Maize	-12	-19	-5	-15	-5	-15
Other cereals	7	7	7	5	2	4
Cassava	4	4	-2	2	-8	0
Other root crops	10	-1	8	-2	7	-4

DATA SOURCES: BUREAU OF STATISTICS, MALAWI, MOZAMBIQUE, S. AFRICA AND ZAMBIA.

[23] The quantities of roots and tubers are in wet form and not in flour equivalent.
In S. Africa, meats dominated food expenditure on average.

TABLE 5.3. EXPENDITURE ELASTICITY FOR INDIVIDUAL FOOD COMMODITIES IN S. AFRICA.

Food Item	Expenditure elasticity
Beef/Mutton/Pork	1.75
Chicken	0.88
Mealie-meal	0.65
Rice	0.81
Bread	0.81
Fresh dairy	1.45
Apples	1.26
Tomato	0.70

DATA SOURCE: AGBOLA ET AL. 2003.

5.4 Expenditure and Own-price Elasticity

Based on expenditure surveys in the region, the expenditure elasticity for all food groups was positive but the responsiveness of consumption to increases in expenditure varied by food group and income category. The positive expenditure elasticity indicated that an increase in expenditure to total food would lead to an increased consumption of all food items. In S. Africa, the expenditure elasticity was greater than unity for meats, dairy and fruits indicating that these products were luxury goods on all household groups (Bopape and Myers 2007.). The expenditure elasticity of beef/mutton/pork, eggs and fish was greater than one (Table 5.3) while that of chicken was less than one suggesting that chicken constituted less of a luxury consumption good than other meats. Expenditure on meat and fish was more elastic among rural and low-income households than among urban and high-income households. This suggested that rural and low-income households were most vulnerable to expenditure shocks. Furthermore, price increases in chicken impacted negatively on all households in general and poor households in particular.

Grains and vegetables had an expenditure elasticity of less than one indicating these groups were necessities in S. African diets. Bopape and Myers (2007) established that grains were expenditure-inelastic across all household groups. As expenditure increased for food, the shares of individual items within the group remained constant.

Own-price elasticity of demand for food groups was negative and statistically significant (Agbola et al. 2003; Bopape and Myers 2007). This meant that the price of a food item was an important factor influencing food consumption. With the exception of mealie-meal, bread and milk powder, own-price elasticity for the other food items indicated that an increase in own-price led to a less than proportionate change in demand in the household diet. Meats were the most elastic food group. Households responded more than proportionately to changes in the prices of meats. When substitution effects were considered, grains became price-inelastic (own-price elasticity estimates less than unity). But among high-income households, grains remained price-elastic with and without compensation. This suggests

that high-income households had greater substitution possibilities and were less threatened by high food prices than other households.

Agbola et al. (2003) found out that among S. African households, cross-price elasticity estimates were generally nonsignificant indicating that gross substitution among commodities within food groups did not exist. The cross-price elasticity estimates were lower than own-price elasticity estimates. This implied that S. African households were more sensitive to changes in own-prices of broad food groups and individual commodities.

5.5 Effects of Increases in Maize Prices

In general, the simulation results of a 50% increase in the price of maize provided a good indication of the impact of increases in food prices on food security at the household level. The upswing of food prices results in households reducing the consumption of foods whose prices increased and exploiting substitution possibilities according to relative prices. For Zambia, a 50% increase in the price of maize reduced the consumption of maize and other cereals by 15.6%. On average, poor and food-insecure households reduced the consumption of maize, the main staple food, to a lesser extent as compared with nonpoor and food-secure consumers. Evidently, the consumption of other foods increased, with the extent of the changes being determined by the estimated cross-price elasticities.

The simulation results for Malawi indicated that when the maize price increased by 50%, the quantity of maize consumed by the poor and insecure households fell by 5% while it fell by 12% for the nonpoor consumers. This suggests that the poor and food-insecure households have limited substitution possibilities as compared to the nonpoor households. Increases in maize prices forced the expenditure shares to rise by 16 and 13% for the poor and nonpoor, respectively. The highest increase in the share of expenditure was among the urban poor (20%) who sourced 80% of their maize from the market. Increases in maize prices were also associated with increased quantity of other cereals, roots and tubers, vegetables and pulses consumed by both groups. A general increase in the price of maize and other cereals led to a reduction in quantities consumed for all cereals.

Low elasticity of maize-price demand meant that demand contracted less proportionately to the 50% reduction in the price. Across all household classes, maize demand was inelastic, mainly due to lack of substitution possibilities in consumption. Maize was a basic necessity. Over time, consumers may become aware and take more time to adjust to changes in maize prices.

When the price of maize increased, the quantity of cassava consumed by rural households increased. The cross-price elasticity implied that cassava was a good substitute for maize in

rural areas. Cassava was cheaper than maize in rural areas. The nonpoor rural households were more responsive and increased the consumption of cassava more than the poor rural households. The nonpoor rural households produce more cassava and could switch to it easily. The increase in cassava consumption was less for landless households than for those who produced cassava.

The increase in the share of expenditure effect following an increase in maize prices was more apparent among poor households than among nonpoor households. In Zambia, the share of expenditure on maize increased by 16% for the poor and 10% for the nonpoor. The results in Malawi showed that the share of maize expenditure increased by 16 and 13% among the poor and nonpoor households, respectively. This effect on food expenditure was because maize was a major item of expenditure for the poor than for the nonpoor. Among the poor households, the greatest increase in the share of expenditure on maize was among the urban poor. In both Malawi and Zambia, the share of maize expenditure of the urban poor increased by 20%. Poor urban households absorb the biggest shock relative to the size of their incomes.

Given the high share in food expenditure on maize, increases in maize prices increased food expenditure and increased the number of poor households while reducing the number of nonpoor households. According to the simulation results, the number of poor households increased by 4.3% and the number of nonpoor households reduced by 5.6% after maize prices increased by 50%. The overall effect was to increase the number of poor households. Corroborating evidence from a recent analysis of detailed household data on nationally representative samples showed that a 10% increase in staple food prices in Malawi and Zambia would raise poverty by 0.6 and 1.1% in rural areas, but only 0.4 and 0.6% in urban areas (Ivanic and Martin 2008).

6. Government Responses to Rising Food Prices

The crisis of soaring food prices was not predicted and came with no warning. It thus created a desperate situation and panic set in. Given that food insecurity ravaged the region in 3 out of the last 9 years, the problem has become systemic. It is almost certain that another food crisis looms in the immediate future. How did nations in southern Africa respond to patch up the disrupted food system? Were the responses efficient and effective?

De Villiers (2009) characterized government reactions as either sensible or dreadful. The reactions among countries that appeared in a frightened and panic mode included price controls, export bans, export quotas/tax, elimination or reduction of import tariffs, subsidies and restocking food reserves. Reactions among governments that appeared in control included maintaining unrestrained market flows, investing heavily on infrastructure, direct assistance to the poor, quick decisions, limiting speculation on future exchanges and improving the information to the market. Which countries put up level-headed responses?

The extent to which interventions focused on consumer-end versus producer-end was an important area of policy concern (Getnet and Chipeta 2008). Given limited resources, governments faced a dilemma of choice of simply rescuing desperate consumers in the short term versus supporting producers in the long run. Without investments, productivity was destined not just to stagnate but to regress. Did countries in southern Africa give heightened attention to long-term investment in agriculture?

This section examines the measures adopted by countries in the region to improve food security and alleviate poverty and discuss the impact of these various measures. These measures were grouped into three main categories: trade-oriented policy measures; domestic market, consumer-oriented measures and producer-oriented responses.

6.1 Trade Policy Measures

Trade policy responses used instruments such as reduction in import taxes (tariffs, excise and value-added tax [VAT]) and restrictions on exports to reduce domestic prices and/or increase domestic food supplies.

6.1.1 Reduction in Import Tariffs and VAT

Mozambique imported significant quantities of grains in the 2008-09 marketing season. Prior to the crisis in food prices, all basic foods were exempt from VAT [24] and import tariffs on basic grains had a maximum rate of 2.5%. Milled grain products faced a 20% import duty. During the crisis, the Government of Mozambique did not zero-rate basic foods for VAT purposes but standard-rated [25] imported grain for local milling only. VAT on a range of other imported food stuffs including milled grain products, rice, wheat, bread, fuel and other primarily necessary goods was kept in place. The 20% import duty on milled grain imports was maintained.

Tschirley and Jayne (2008) argued that the VAT policy shift to standard-rate grain imported by local millers only discriminated against imports of grain for sale as grain. Traders who sold grain in informal markets were ineligible to access the VAT reimbursement. As a result, grain prices in southern markets continued to rise faster than maize meal prices. During the peak of the crisis in March 2009, grain prices in Maputo exceeded those in Blantyre and Lusaka. [26] Waiver of import VAT on all grains could have put a significant check on rising grain prices in informal markets in the south. Removal of duty on imported grain was not going to make a significant dent on domestic prices because the tariff rate was only 2.5%. But the impact would have been different had duty been removed on milled/processed grain products. Arndt et

[24] This status of "exempting VAT" meant consumers were charged and the marketing bill on VAT-exempted food commodities had a 17% VAT cost component.

[25] Importers of grain paid VAT but were entitled to reimbursement if the maize was milled locally.

[26] Prices in Maputo reached $600 per ton at a time prices in Blantyre and Lusaka were below $450 per ton.

al. (2008) argued that removal of import duty on wheat and maize flour would have transferred significant benefits from the millers and government to consumers. [27]

The announcement by the Government of Zambia of its intention to import 100,000 tons of maize in August 2008 caused large traders and millers to refrain from conducting commercial imports. The private sector had earlier failed to secure government assurances that government will not off-load subsidized grain in the event that the private sector brought imported grain. Even though the industry had successfully agreed with government to waive import duty on maize imports, government delayed the process of duty waiver and the waiting continued. Meanwhile, export prices of grain in S. Africa continued to rise. Eventually, import duties were waived in October 2008 for a period of 6 months. As the private sector was gearing to bring in imports, government insisted that only nongenetically modified (GMO) maize would be allowed into the country. This preference was oblivious of the depletion of non-GMO stocks in the region. Because of this bureaucratic ineptitude, imports failed to put a cap on domestic prices. Commercial maize imports into Zambia were completely paralyzed, yet prices continued to soar.

Even though Zambia waived tariffs on maize grain, albeit late, government kept tariffs on maize-meal products in place. Import tariffs on wheat and rice were also kept intact. A tariff waiver for Zambia had an impact on price reduction because imports originated from S. Africa, a non-COMESA country.[28] The impact of eliminating tariffs in Zambia was not substantial because the imported volumes were limited.[29]

[27] Results of a simulation exercise suggest that the richest quintile would have received 35% of the benefits compared to 10% received by the poorest quintile.

[28] According to the COMESA FTA (Free Trade Agreement), imports of maize grain by a member country from another member state attract zero tariffs. In Zambia, maize grain and maize meal imports attract a tariff of 15 and 25%, respectively. In addition, the government charged VAT on maize imports at 16.5% of taxable value, comprising cost, insurance and freight, and a 15% duty for maize grain, or a 25% duty for maize-meal. It also took time to evoke the SADC free trade protocol on grain imports from S. Africa.

[29] Less than 40,000 tons of government imports arrived in Zambia late in January 2009, 6 months after the decision to import was announced.

Grain products in Zambia were VAT-exempt and during the food crisis the VAT status did not change. Malawi and S. Africa neither eliminated tariffs nor zero-rated any food commodity for VAT purposes during the crisis.[30]

6.1.2 Export Restrictions on Grain Products

When food prices soared, Malawi and Zambia relied on imports from the region but startlingly instituted export bans to other parts of the region. Malawi and Zambia imposed export restrictions on grain products in an attempt to shore up domestic supplies unmindful of the needs of its northern neighbors. [31] Governments in these two countries mistakenly felt maize exports threatened the availability of cheap food in the domestic markets. [32] Such decisions were premised on the misunderstanding that maize without borders exposed the country to insecurity as governments had no control over the availability of stock.

There is no doubt export prohibitions exacerbated the tightness of markets and caused further surges in prices. Given that the regionally traded grain market in southern Africa is already thin, restrictions by Malawi and Zambia potentially escalated regional prices by instilling unnecessary panic. [33] The desire to keep food prices low at home overshadowed the benefits of foreign exchange earnings and the reputation of being a reliable food supplying neighbor. With hindsight, were these decisions justified?

[30] Most of Malawi maize grain imports are informal and no tariffs are incurred.

[31] Historically, Zambia and its closest neighbor Malawi have been major importers of rice and wheat from regional and international markets while striving for national self-sufficiency in maize. Zambia and Malawi occasionally export maize in normal years. The 2007/08 production season produced normal harvests in both Malawi and Zambia but the two countries went on to impose export bans.

[32] The export ban in Malawi covered five commodities including maize, maize bran, soybean, rice, and sesame.

[33] India and Vietnam imposed export restrictions on rice around December 2008 when prices were still below $400/ton. Five months later, prices shot to over $1,000/ton.

Article XI of General Agreement on Tariffs and Trade (GATT) 1994, allows export prohibitions or restrictions to prevent or reserve scarce staple food to meet food needs of local populations. However, article 12 of the Agreement on Agriculture mandates that due consideration to the effects of export prohibitions on importing countries be made. A transparent procedure was established for food exporting countries to follow (UNCTAD 2008). When bans on food exports were introduced by Malawi and Zambia it is uncertain whether the procedure was transparent and due consideration of countries north of Zambia was made.

On the other hand, Mozambique and S. Africa left their borders open for imports and exports. These two countries have practiced and maintained this open trade policy for the past two decades. S. Africa was involved in a two-way trade in maize and wheat. Mozambique also conducts two-way trade in maize. During the crisis, surplus northern Mozambique exported maize to Malawi. [34] The center of the country also had a surplus and supplied southern Mozambique and eastern Zimbabwe. Southern Mozambique, a traditionally deficit region imported maize grain from S. Africa. For over two decades S. Africa and Mozambique have built up an institutional framework that promotes two-way maize trade as a key component of national food security strategies and, during the food price crisis, these two countries did not shift away from this strategy of trade-based food security. [35]

Mozambique did not introduce an export ban because S. Africa did not impose such a ban to Mozambique. At the same time, S. Africa did not impose any export ban during the food crisis simply because Argentina did not impose any export restrictions to S. Africa. Nijhoff (2010) argued that maize production was booming in Argentina, S.

[34] Anecdotal evidence suggests that during the food crisis, Mozambique banned informal exports to Malawi. Provincial governors in the north took an anti-trade position but the central government prevailed and trade was allowed to continue.

[35] Historically, Mozambique and S. Africa have relied on regional and international trade as a key component of their food security strategies. These two countries adopted a broader notion of food security based on regional and international trade patterns and have, historically, based their food strategies on large imports of maize, wheat and rice while exporting maize to countries in the north.

Africa and Mozambique because of the market confidence and absence of nonmarket risks. [36]

Tschirley and Santos (1999) investigated the effects of producer and consumer prices on Mozambique due to its opening trade with Malawi. The evidence suggested that producer prices were positively and significantly affected in the key producer markets north of Mozambique but consumer prices in the urban centers south and in the center of the country were unaffected. Govereh et al. (2008) showed that surplus production areas in southern Africa were artificially separated from consumption areas by government-imposed trade barriers. These cross border trade flows not only ensured low-cost food to reach consumers but provided incentives to producers to increase production levels. The action by Zambia to ban exports to the Democratic Republic of Congo (DRC) drove up prices in neighboring DRC, while depressing prices paid to farmers and traders in Zambia had limited effects on reducing consumer prices (Govereh et al. 2008).

Trade surveillance by FEWSNET (2009) showed that even though regional trade in maize was restricted, cross-border flows continued but at greatly subdued levels. Informal maize exports from Malawi to Mozambique, Tanzania and Zambia in 2008/09 were a mere 7% of volumes exported in the 2007/08 marketing seasons. Zambian exports to DRC in 2008/09 were less than 14% of volumes exported in the previous marketing season.

According to Staatz et al. (2008), export bans act like badly designed and poorly implemented export taxes. Such bans depress producer incentives in low-cost producing regions and raise producer prices in higher-cost importing regions. The overall effect is to discourage production in areas that have competitive advantage and encourage maize production in areas where production is more costly.

[36] It is not clear to what extent the variation in policy orientation between Zambia/Malawi and S. Africa/ Mozambique is influenced by their geographical position. Mozambique and S. Africa are coastal-linked countries while Malawi and Zambia are land-linked countries.

6.2 Domestic Consumer-oriented Measures

Measures designed to provide direct support to consumers included food subsidies or price controls, social safety nets and tax relief. Open market operations to control prices and subsidize consumers were implemented in Malawi and Zambia where grain marketing agencies were still the major players in the market. [37] All the countries had social safety net programs before the crisis but the mechanisms were expanded to take care of increased numbers of vulnerable individuals.

6.2.1 Food Subsidies and Price Controls

The prevailing global political philosophy suggests that the state's role in agricultural markets be limited to setting up the structure within which the private sector operated (Josling 1998). In southern Africa, the adoption of more liberal agricultural marketing policies reduced the role of marketing boards in several commodity chains. Mozambique and S. Africa withdrew completely from the role of sole marketer of food commodities. But in Malawi and Zambia, the process of market reforms has proceeded slowly. Soaring food prices in 2008 prompted the Governments of Malawi and Zambia to intervene aggressively.

Malawi food price controls

Tschirley and Jayne (2008) argued that Malawi's food policy had the heaviest direct government involvement of any country in the region. During the crisis of food prices, the Government of Malawi attempted to control prices by outlawing private grain trade. [38] The objectives of this intervention were to stabilize prices of maize grains and

[37] Grain marketing boards are still intact despite government pronouncements that grain markets are liberalized.

[38] Nominal maize prices did not bottom out as they normally do in May and June of each marketing season. Instead, prices continued to rise after April. This market signal would normally suggest that the crop available in the market was short. Yet the 2008/09 marketing season was unique in terms of private traders' behaviors. In the previous (2007/08) marketing season, traders made attractive earnings from maize exports to Zimbabwe. When the 2008/09 marketing season opened, the expectations were great and traders speculated on maize exports in a big way. They purchased aggressively and tried to out-compete one another early on and this behavior drove prices up. The rising maize prices created panic and government action to also purchase fueled further increases in domestic prices.

improve the availability of stocks to poor households. A maize price band policy was introduced where a range within which the maize price is allowed to move is specified by setting the minimum and maximum prices. Through the Agricultural Development and Marketing Corporation (ADMARC), government stipulated a pan-territorial and pan-seasonal producer price of K45/kg and a retail price of K52/kg. This decision on fixing of prices was accompanied by a temporary restriction on all domestic maize trade. Government went further to de-license traders and processors who did not comply with these restrictions. The operations of the Agricultural Commodity Trade were equally frozen. ADMARC was the only entity allowed to trade in maize.[39]

A blanket ban on all private trade meant that millers and other private processors had to turn to ADMARC for supplies, yet ADMARC had no such capacity. Government was gradually compelled to refine the ban and relicensed selected traders who were also processors and those who had contracts with the National Food Reserve Agency. Government failed to force traders to sell all their maize to ADMARC as the former continued to operate in open markets selling maize above the fixed price.

A parallel maize retailing market eventually emerged. ADMARC took charge of one channel operating within the recommended price band, and its outlets were characterized by long queues of individuals receiving an allocation of 20 kg to each household per month. The private sector operated another system where retail grain prices were double ADMARC retail prices in some areas. Vendors were very active in open markets and sales were open without quantity restrictions.

[39] Unfortunately, these restrictions came into force after traders had already purchased large amounts of maize at K60/kg. Traders holding stock were required to deliver their stocks to ADMARC at K52/kg. Because of the additional cost of transport from farm to market, storage costs and the total financial charges on working capital, a selling price of K52/kg meant a loss of up to K20/kg for traders.

Zambia food price controls

As maize-meal prices continued increasing unabated, in December 2008 the government announced its intention to intervene openly in the market to stabilize the maize-meal price at the target level of K53,000 per bag of 25 kg. Government's initial plan was to release 30,000 tons of subsidized maize to millers who were supposed to blend with their stock and sell maize meal at a guaranteed low price. [40] Despite these efforts, the price of maize meal stayed above the targeted amount of K53,000 per bag of 25 kg. Government later abandoned this blending plan and decided all the maize to the millers should be subsidized. Late in December 2008, government signed a legal instrument with millers to purchase the stocks millers held at a price of $385 per ton and released the same stock to millers at a price of $220 per ton.

Between January 2009 and February 2009, government procured 80,000 tons of maize which were released back to millers. The cost of government's subsidy program amounted to K351 billion from December 2008 to mid-February 2009. In early March, the Food Reserve Agency (FRA) again procured 80,000 tons from the domestic market, this time purchasing maize from traders as well. Government eventually discontinued the delivery of subsidized maize to millers after March 2009.

This intervention created problems in the market. Millers refrained from procuring commercial maize from traders preferring to wait for government stocks. This resulted in inadequate supplies of maize meal in the market. In addition, the transfer of ownership of maize to government and back to millers did not provide any guarantee that the grain will be milled and released to the market.

[40] FRA was to release stocks to millers at $275 per ton, while millers would also utilize an equivalent amount of commercial stocks at market prices that ranged between $410 and $420 per ton.

6.2.2 Social Safety Net Measures

Apart from market and trade interventions, governments in the region also used safety net measures, which had the effect of smoothening food consumption thereby averting starvation and malnutrition and protecting household assets of the most vulnerable groups.

During the food crisis, Zambia, Mozambique and S. Africa used cash-based transfers. Although these countries already had ongoing programs before the crisis, the level of payment and the number of recipients were scaled up. Direct food transfer was common in all the four countries and these were implemented in the form of self-targeted food-for-work programs, and emergency food aid and school feeding programs. Technical and financial support was provided by a joint donor group. Because these safety net measures were targeted, they were efficient and effective in reaching the most vulnerable population groups. In their analysis, Arndt et al. (2008) established that the benefit incidence for the poorest quintile was 40% while the richest quintile obtained 5% of the benefit. Safety net measures were more appealing and scaling up such programs was progressive, assuming good targeting.

S. Africa adopted social interventions to avoid destabilizing the welfare of the vulnerable using the framework as a response to the international economic crisis (RSA 2009). A targeted food relief program to enhance food accessibility and affordability to the poorest communities was adopted. A Food-For-All program to procure and distribute basic foods at affordable prices to poor households and communities was implemented.

6.2.3 *Fuel Subsidies*

Governments of Zambia and Mozambique reduced excise tax on fuel. This was a welcome relief but this measure was highly regressive. Arndt (2008) simulated the benefit incidence of a 20% subsidy on gasoline and 10% subsidy on diesel and found out that the richest quintile received 71% of the benefits. The poorest quintile received only 3% of the benefits of fuel subsidies.

Fuel prices in Malawi have in-built stabilizers in the form of levies. The government aims at striking stability in the fuel prices. The government either increases or reduces these levies depending on the world price of oil. The Automatic Pricing introduced in 2000 continues to be the main principle behind fuel pricing. This system links pump prices to procurement costs and exchange rate movements with a 5% trigger band (Government of Malawi 2009). The formula is managed under a multi-sector Energy Pricing Committee (EPC), which meets once every month to assess changes in the agreed parameters that constitute the In-Bond Landed Cost (IBLC) and the value of the Malawi kwacha against the US dollar. On a number of occasions government has suspended the principles of automatic pricing and opted to manage the price structures in a way that minimizes the impact of the fuel price increase on the economy as well as to recover losses due to loss in value of the Malawi kwacha against the US dollar and the high prices of fuel at the international market.

6.3 Producer-oriented Measures

The recent crisis could not be overcome without additional investment in food production. The price rise and growing demand made investments in agricultural production profitable. Governments in the region, therefore, needed to put in place incentives for domestic and foreign investments to boost food production. Most governments in the region introduced short-term measures aimed at supporting producers and production. Nonmarket-based production support and/or input programs were more common than market-based interventions.

Fertilizer and seed subsidy programs were implemented in Malawi, Mozambique and Zambia. Malawi and Zambia had targeted input subsidy programs for the past 10 years but during the food crisis, the level of subsidy and the number of recipients were scaled up. Malawi and Zambia offered producer price support through the activities of marketing boards but these interventions were targeted at smallholder farmers only. [41] Zambia had an ongoing electricity tariff subsidy for large-scale commercial farmers during the period of food crisis. Farmers using electric-powered pumps benefited from this subsidy.

Even before the food crisis, the Government of Mozambique had started to undertake steps to increase food production and employment. As early as 2006, authorities in Mozambique called for solutions to the food problems. In 2007, government approved a Green Revolution Strategy for intensifying production. In 2008, government approved a 3-year comprehensive action plan called "National Plan for Food Production" (PAPA). Part of this plan called for reinforcements of financial resources for the development of inputs and the product market and the provision of services.

[41] FRA procured maize at a higher price than that offered by the market.

Increased foreign direct investment (FDI) in agriculture and involvement of transnational companies could have provided a useful response. What was notable was that Mozambique and Zambia were targeted by cash-rich nations interested in buying or leasing huge quantities of land for production of food for export. Demeke (2009) argued that these initiatives were meant to circumvent normal international trade processes. Even though there were risks, these arrangements could have led to increased production and employment generation.

7. Discussion Summary

7.1 Cause of Increases in Food Prices

Developments in global cereal prices witnessed in 2008 were unusual when looked at only from the perspective of the last decade. But when looked at from a longer historical perspective, the price spike was not unprecedented. The current price spike is neither the only one nor the most significant one to occur in the last 30 years. Southern Africa experienced similar spikes in 2002 and 2006 because of unfavorable weather. What is unique about the spike in the 2008 food prices in the region is that it had nothing to do with bad weather.

The causes of the steep world and regional increases in food prices in 2008-09 were complex. Different factors influenced prices for different food commodities differently. Observing that the price boom included nearly all basic staple crops, livestock and nonfood commodities, the driving forces were beyond simple supply shocks. Clearly, the unique pattern of increases in food prices in the last few years was a coming together of many supply-side, demand-side and other relevant forces.

Mismatched Supply with Growing Demand

Growth in both population and income in the region has surpassed growth in food production. This was a worrying trend in terms of food security. The demand for food is guaranteed to increase each year, yet the productivity levels for staple foods were alarmingly stagnant in a number of countries. Both public and private investments were needed to ensure food supplies keep pace with growing demand. The popular attempts to subsidize food production clearly addressed short-term goals of food security but may prove unsustainable in the long run. Instead, the elimination of nonmarket risks in the food industry was key to stimulating private investments and provided confidence in food markets.

Expanding Corn-Based Biofuel Production

There was consensus that legislative changes by governments in North America and Europe to subsidize the use of corn as a feedstock in biofuel production stimulated demand for corn, which fueled global corn prices. What remains controversial was the assessment of the contribution of increased corn-based biofuel production to global corn prices. In southern Africa, biofuel production initiatives using corn as a feedstock were also taking off. Increased utilization of corn in biofuel production in the region could put pressure on existing supplies and cause prices to rise.

High Energy Prices Raising Cost of Food Production

There was no doubt that the global increase in energy prices was transmitted easily to markets in southern Africa. However, it was not clear whether increases in fertilizer and transport rates led to increases in food prices. If farmers fail to mitigate higher input costs by altering their input proportions, they either demand higher producer prices or face lower margins. High energy prices in 2008 had the potential to reduce production investments in subsequent seasons unless producer prices also increased to keep producer margins attractive.

Thin Markets and Low Carryover Stocks

The thinness of trade appeared to be seemingly related to exposure to price shocks. On average, the volume of trade in countries such as Malawi and Zambia was thin. During the crisis, inflows of grain trade into Malawi, S. Africa and Zambia were largely insignificant. This meant that these markets were less exposed and less likely to import external shocks. Mozambique had the most significant trade inflows in 2008/09 relative to consumption and unsurprisingly suffered the greatest price shock.

Carryover stocks provide a buffer or cushion on domestic prices in case of unforeseen inter-seasonal shocks. During the recent crisis, grain prices of S. Africa rose much less than in neighboring countries because of high stocks-to-use ratios. On the other hand, Mozambique had the lowest stock-to-use ratios and consequently experienced the highest price increase.

Transmission of Global Shocks to Regional Markets

Each season, weather patterns varied across the region. As a result, the region always had pockets of surplus and deficit in each season. A few countries, such as S. Africa, were self-sufficient in maize, but several others were net importers of food. Significant flows of grain within the region were necessary and occurred every season. Domestic markets were, therefore, not independent of one another. Instead, each domestic market was part of the larger regional market and was influenced by events outside national borders.

In the short run, commodity market prices in southern Africa moved independently of world market prices. But in the long run, regional markets were part of the global market. Therefore, recent shocks in world markets were gradually transmitted to the region. Maize prices in several countries in the region increased not because of production shortfalls but because of the world price shock. The panic that characterized the global market was transmitted to the regional markets as well. The extent to which the world price shock was transmitted to each domestic market was a function of trade, price and market policies, transfer costs and consumer preferences.

7.2 Trends in "Headline" and "Food" Inflation

Another cause of high food prices was soaring inflation levels. Changes in inflation levels during the crisis period varied across the region. In addition, the expenditure component that drove price increases in each country also varied.

General prices in most countries have more than doubled over the last 10 years. Increases in general prices were exceptionally high in Mozambique. Energy and transport costs were the biggest expenditure items for consumers in S. Africa. Consequently, they were more threatened by increases in fuel and transport costs. In the majority of the countries in southern Africa, food was the biggest expenditure category. Food prices continued increasing, even quadrupling, in some parts of the region. The nature and duration of increases in food prices varied across the countries. Grain staples accounted for the largest weight category in food CPI for Malawi, Mozambique and Zambia.

Changes in maize prices were largely responsible for changes in food CPI in Malawi, Mozambique and Zambia but not in S. Africa. In S. Africa, prices increased but less so than in neighboring countries. In comparison, meat staples accounted for the largest weight in S. Africa.

Food prices exhibited high levels of seasonality in Malawi, Mozambique and Zambia. But for S. Africa, the cumulative food price index showed no cyclical pattern. This suggested that S. Africa was more successful in managing and making the necessary investments to adequately match food demand with supply over time.

Recent inflation levels of food in Mozambique and Zambia were characterized by a continuous increase for a period of 18 and 24 months, respectively. Even in S. Africa, food inflation increased continuously for 3 years. This phenomenon characterized the food crisis in the region. Food inflation levels in S. Africa reached a peak that matched the levels reached previously during the 2002-03 drought. It is possible that had other governments in the region taken the "hands-off" approach, the inflation levels of food could have matched the levels reached during the 2002-03 crisis.

During the recent crisis, food inflation levels in Malawi were atypical. In Malawi, these levels remained unchanged for the duration of the crisis, which was a commendable achievement. But did the welfare costs of these measures justify the benefits achieved and were these methods the best to achieve such a result?

7.3 Intra-seasonal Nominal Maize Price Fluctuations

In spite of the global commodity crisis, S. African maize markets showed a lot of confidence and displayed a high degree of stability compared with other countries in the region. This was not surprising because maize production has grown, significant investments in marketing infrastructure such as storage facilities have been realized and the Government of S. Africa has consistently espoused open trade policies. Although the government did not introduce any drastic measures, such as subsidies, prices remained stable.

Maize prices in other countries in the region fluctuated a great deal revealing a state of shock as panic and instability set in. During the food crisis, maize markets in Malawi, Mozambique and Zambia appeared vulnerable. S. Africa's neighbors can extract lessons on how to manage maize markets and control instability.

The degree of variation in seasonal prices of maize grains reflected the relative cost of storage and risks across these countries. Seasonal price changes were lowest in S. Africa because its maize market developed skills and bureaucratic rules that permit active use of futures markets to provide the lowest and most stable costs of grain. Relatively high increases in seasonal prices shown in Malawi and Zambia were commensurate with either high storage costs or high nonmarket risks. Grain traders and processors in Malawi, Mozambique and Zambia paid higher prices than they would have paid simply by using forward contracts and futures markets to hedge against price risks. Spot market prices which dominate the trades in Malawi and Zambia were less stable than futures markets and this was reflected in the large rise in seasonal prices in these countries.

Variation in intra-seasonal prices partly echoed the level of nonmarket risks prevailing in the maize market. It appeared that the price fluctuation picked up in Malawi and Zambia and possibly Mozambique was more than market-based. The nonmarket issues of grain parastatals in Malawi and Zambia were behind this wide seasonal fluctuation in prices. On the other hand, the maize market in S. Africa was transparent and the policy environment predictable. Non-price risks in the S. African maize market were at a minimum.

Consequently, producers had incentives to produce, banks could finance and traders had incentives to store. The result was that the trading margins were tight but very predictable. In nominal terms, maize price changes in 2008-09 were a small fraction of the changes experienced in the drought-affected 2002-03 marketing season. The drought in the 2001-02 production season probably had more devastating impacts than the recent global crisis in prices. Therefore, the threat of global climatic change appeared more serious than the combined threat of global commodity and financial crisis.

7.4 The 2008-09 Price Crisis in Southern Africa

During the first half of the 2008 calendar year, maize prices in Malawi hovered above average levels. These conditions were not politically tenable and when the situation did not improve, the government intervened in May 2008. Following the interventions, grain prices were depressed below the normal pattern. Based on this result, government measures toned down the pressure on maize prices.

In Zambia, the crisis in maize prices set in after August 2008. Government was justified not to intervene earlier than August. But when prices continued to rise above the normal pattern, government introduced subsidies. During the period when the subsidy was in place, maize prices were depressed below average levels. Just as in Malawi, interventions by the Zambian government softened the pressure on maize prices at the time they were destined to continue increasing.

For Mozambique and S. Africa, maize prices were clearly above normal levels. Unlike in Malawi and Zambia, governments of Mozambique and S. Africa did not intervene directly in the market. The latter governments allowed the shock in prices to be absorbed largely by consumers.

7.5 Impacts of Rising Prices on Households

Regardless of the circumstances of a given household, increases in food prices increased the levels of food expenditure of all households. The impact of these increases differed with the different circumstances of various households. To assume this crisis was simply an urban problem is invalid. In southern Africa, there was a large share of net buyers of food among rural households. Assuming higher retail prices for food were transmitted to rural markets, net food purchasers were exposed to food insecurity but surplus producers were presented with an opportunity to improve their sales revenue. In general, the poorest who could afford the least were the most seriously affected by soaring food prices. The full impact on consumers even spread to nonfood expenditures reducing availability and affordability of health, education and other social services.

Although most of the populations in the region, especially poor households, were engaged in agriculture, evidence suggests that a significant share of those engaged in agriculture were net food purchasers. Higher prices were an opportunity to a disproportionately smaller proportion of food producers who could manage a surplus. Urban households being net food purchasers were affected negatively by rising food prices. Urban householders who had the opportunity to produce their own food had the flexibility to manage higher food prices than those who relied 100% on the market. The urban poor represented an important group to target with public assistance programs but were not the only vulnerable group.

Higher food prices had the potential not only to reduce the quantity of food consumed but also to squeeze out nonfood expenditures, especially among the poor households. Cereals remained an important food category to monitor the impacts of increases in food prices also, especially, among the poor households. Meat and other livestock products also deserved attention. Within the cereal food group, maize was the dominant commodity. Given this dominance, increases in maize prices were likely to have major implications on livelihoods unlike price increases of other cereals. However, there was geographical variation within countries. Wheat products were important in urban areas and cassava was also important

in rural areas where a dual staple production system thrived. Roots and tubers appeared to be important buffers against rising maize prices.

Maize meal, bread and milk powder were necessities, especially among poor households. Households in the region did not have substitution possibilities for these commodities. Consumption of these commodities was habitual and consumers did not respond to price changes, especially in the short run. Households with high income had greater substitution possibilities and were less threatened by high food prices than poor households. On average, poor and food-insecure households reduced the consumption of maize, the main staple food, to a lesser extent than nonpoor and food-secure consumers. Nonpoor households were more responsive and substituted other food items for maize easier than poor households. High incomes allowed households to have a number of close substitutes within the market. The substitution effect was stronger among the nonpoor who could switch to alternatives easily.

Increases in food prices increased food expenditure and increased the number of poor households while reducing the number of nonpoor households. The overall effect was to raise the level of poverty in the region.

7.6 Policy Responses to Mitigate Impacts of Rising Food Prices

To mitigate the impacts of rising food prices, governments in the region introduced a mix of emergency social protection measures and long-term investments. Emphasizing consumer-end actions alone was potentially a lost opportunity to address the root causes of market instability and manage future crises in food prices. The extent to which producer-end interventions were less expensive and more sustainable in their impacts on food availability and prices than consumer-end actions was also critical for policy decisions.

7.6.1 Trade Policy Measures

Trade policy measures were popular among governments in the region because they were easy to implement. The effectiveness of reduction in import taxes was never in doubt but the effectiveness of export restrictions was doubtful given poor enforcement.

The shift in trade policy in Mozambique was narrow and produced benefits targeted only at grains and applied to only those millers who were VAT-registered. The high import tariff on grain flour and the maintenance of VAT-exempt status on grain flour protected local millers and ensured the government would generate revenue. Maintenance of the VAT-exempt status on grain imported for sale discriminated against those who imported grain to sell in informal markets. It appears the adjustments in the trade regime were meant to benefit industrial millers and government.

The inability to use imports to stabilize domestic prices in Zambia represented bureaucratic clumsiness. It was not clear who benefited mostly from this lack of competence in managing the food system.

The geography of Malawi, Mozambique, S. Africa and Zambia entails that domestic trade policy should support the north to export to northern markets and the south to

import from markets in the south. This is the policy practiced by Mozambique and S. Africa. This principle equally makes sense for Malawi and northern Zambia to export to DRC and Tanzania while the south imports from Mozambique and S. Africa. The decision by Malawi and Zambia to ban exports was not in the short- or long-term interest of these nations. Ultimately, consumers in the importing regions and farmers in the exporting regions had to shoulder the negative consequences of export bans imposed by Malawi and Zambia.

Through actions followed by Malawi and Zambia, neighboring countries such as DRC will be forced to aim for greater national food self-sufficiency in the future. Yet, the economies of the region could grow significantly and faster if resources were directed towards economically high-rewarding sectors and regional trade was used as a stabilizer of domestic maize markets. Export bans represent a missed opportunity for the region to thrive.

7.6.2 Consumer-oriented Measures

The spatiotemporal pattern of prices signaled producers, traders, consumers and suppliers of storage on the opportunity costs of their decisions. Failure to receive accurate signals on the opportunity cost led to serious disruptions of the smooth spatiotemporal flow of food supplies to consumers. Food subsidies in Malawi and Zambia distorted price signals during the crisis. It was no surprise that, in Malawi and Zambia, queues for subsidized maize meal were common. Such interventions led to misallocation of resources and could result in food shortages in the future.

The policy of the government of Malawi to restrict private firms from buying or selling maize was not effective in the absence of enforcement measures. Enforcing the price band measures would have been very costly and difficult. However, the objective of stabilizing the price of maize grains and promoting access to grain by poor consumers was achieved through the ADMARC activities. The interventions in Malawi established a dual marketing system for maize.

General subsidies were obviously easier to implement than targeted subsidies but were expensive. Instead of a blanket subsidy, a consumer subsidy should have been targeted to the poor only by placing it on a relatively inferior product shunned by nonpoor households. Yellow maize has been used before in Malawi, Mozambique and Zambia. White maize took up a large share of the budget of the poor but was only slightly self-targeting. General subsidies on white maize implemented in Malawi and Zambia were potentially captured by those who did not need cheaper food, and subsidies displaced commercial sales.

7.6.3 Producer-oriented and Other Measures

The main challenge on the producer-support measures was on sustainability. As the subsidy programs expanded, their effectiveness and sustainability became questionable. The direct program cost to governments in Malawi and Zambia was well over $100 million in the 2008/09 agricultural season. This represented 2.6% of GDP and 15% of annual government expenditure in Malawi. In Zambia, fertilizer subsidies alone absorbed 30% of the resources government allocated to the agriculture sector. Protecting consumers and supporting producers at the same time is a serious policy challenge.

Safety net measures play a very important transitory role but there are several challenges with these programs. Their ability to end dependence on food aid and create sustainable livelihoods was questionable. In addition, a substantial amount of the resources got absorbed in developing institutional and technical capacity and not benefiting the vulnerable.

8. Key Considerations and Recommendations

Based on the insights from the analysis done in this review, a set of considerations were developed and are listed below in point form within selected policy areas.

Raising productivity

1. Given that the impacts on nominal maize price following the regional drought in the 2001-02 production season were more severe than the effects of the recent global commodity and financial crisis, governments in the region should be more worried of the former than the latter. Even though there is room for external assistance, the impacts of a regional drought remain more devastating than the recent crisis. With global climate change, drought looms large in the horizon. This calls for a heightened level of preparedness to avoid the catastrophic impacts on food markets.
2. Deliberate, well-calculated and sustainable interventions to improve productivity and allow the food industry to grow are long overdue. Indicators of growth should be monitored closely and lessons shared across the region. Attempts to subsidize production and rewind market reforms may prove futile in the long run.
3. Given the well-known impacts of climate change, governments in the region should consider long-term investments in irrigation to reduce instability in food prices. Public investments to improve distribution of water and tax incentives to the private sector to invest in irrigation equipment are fundamental to arrest high instability in food prices. The type of irrigation investments is an issue that deserves ex ante analysis. Being capital-intensive, investments in irrigation need to be guided by the net benefits that can be derived from different irrigation schemes. Further, the sequencing of public- and private-irrigation investments requires additional attention.
4. While the production of environmentally friendly fuel is a welcome intervention, the use of staple commodities such as maize as a feedstock should be closely monitored. The benefits of a clean environment should be weighed against the nutritional needs of the majority poor households in the region that rely on maize for a significant share of their daily calories.

Improving quality of information

5. Additional work is needed to verify whether producer prices increased as a result of high energy prices. Available data on price gathered from retail markets were unable to show this. Deliberate efforts are needed by market information systems to capture producer or wholesale prices.
6. The common research approach to focus on cereals when monitoring food security assumes cereals take up the greatest share of the consumer basket. This is not necessarily the case across all the population segments of the region. Meats form the most important food category ahead of grains in middle- and high-income population groups. Efforts to monitor food security should give equal regard to the important role livestock products play in consumer diets.
7. An important first step in economic management is to have up-to-date measures of consumer prices. The base year for estimating CPIs should be kept up-to-date to avoid overestimation of price changes. An outdated base exaggerates price increases. Unnecessary price pressures can be avoided by continuously updating systems for generating data on consumer prices.
8. A professional and business approach was needed to avert the strife that characterized food markets in some countries. Consumers would be served well in the future if governments prioritized investments in market information and improved knowledge and skills of managing food imports. Chaotic market conditions hurt consumers. This is avoidable through decisive and prudent decisions by those in authority.

Investment in the food chain

9. Countries in the region would manage market shocks better with expanded investment in storage at all levels along the maize chain. This does not suggest that government should consider a buffer stock for price stabilization. Instead, government should provide incentives for private investments and reduce the level of nonmarket risk which is an important first step for private sector to hold stocks.

10. The intra-seasonal cyclical price patterns common in Malawi, Mozambique and Zambia but not seen in S. Africa epitomize inadequate investment in the domestic food system. The persistent troughs represented missed opportunities for farmers and recurring peaks represented consumer threats. All these circumstances are avoidable if further investments in the food system can be achieved.
11. Even though extraordinary times require extraordinary measures, the achievement of short-term goals should not be at the expense of long-term goals. The invasive and draconian measures deployed by some governments may have devastating long-term impacts if repeated elsewhere in the region. Governments have to work extremely hard to eliminate the perception of high nonmarket risks for private investments in the domestic marketing system.

Regional trade enhancement

12. Regional trade will continue to be crucial, and deliberate efforts to connect the maize markets of the region constitute a priority to attain food security. Regional economic communities and national governments should continue to address barriers to regional trade by reducing or eliminating (1) border measures such as import tariffs and export bans; (2) domestic price stabilization policies, such as stock management; (3) high transfer costs and marketing margins; (4) noncompetitive oligopolistic and collusion behavior among traders and processors; and (5) consumer preference for domestically produced food.
13. In the short run, governments in the region should relax trade measures to encourage specialized production for both domestic and export needs. At the same time, food imports should land in domestic markets with zero tax whether there is a crisis or not to permanently stabilize consumer prices.
14. Governments should continue to reform food trade policies as a way of achieving market integration. The tendency to ban food exports whilst relying on imports is fatalistic for the region. Consumers in the region can only be

served best if food can be sourced from the best supplier in the region. Attempts to invoke national sovereignty and patriotism when handling matters of national food security perpetuate rural poverty. Governments should support farmers to access regional markets for an agricultural revolution to succeed.

Food subsidies

15. It is possible to achieve stable prices without introducing subsidies into the sector. The approach that S. Africa took was far-sighted and penny-wise economical unlike the spendthrift experience of Zambia and the radical route pursued in Malawi.
16. Interventions such as food subsidies or safety net programs that target only urban consumers are premised on the wrong notion that all rural dwellers are surplus producers. This leads to serious policy failure as a large group of net food purchasers in rural areas are not assisted. Rural consumers are among the poorest groups in southern Africa.
17. While maize is the dominant commodity governments in the region target with interventions, livestock products and wheat and cassava products play a significant role but are not considered in public programs. Interventions that are biased only towards maize distort the consumption profiles and reinforce an unrealistic maize dominance. The maize-dominant type of interventions will unnecessarily expose households to instability in maize prices in the future.

Completing market reforms

18. The incomplete market reforms in Malawi and Zambia remain a serious source of nonmarket risk. Further investment by the private sector to modernize the maize industry remains bleak as long as reforms remain incomplete. Governments could eliminate the nonmarket risks by consistently and completely reforming the maize industry.

19. The approach governments took to partner with the private sector to manage the food crisis was progressive. Instead of direct market intervention, public-private agreements could have achieved a price-freeze without distorting incentives for commercial traders and millers who did not participate in the government schemes.

Tax changes

20. The choice by the Government of Mozambique to change VAT status from exempt to standard rate selectively protected commercial millers and ensured continued generation of revenue by government. Consumers could have benefited from reduced grain and flour prices if import duty on flour was reduced and if VAT on all imported grain was zero-rated.

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