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Anticipating and Responding to Drought Emergencies in Southern Africa: Lessons from the 2002-2003 Experience

by

David Tschirley, Jan J. Nijhoff, Pedro Arlindo, Billy Mwinga, Michael T. Weber, and T.S. Jayne

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Department of Agricultural Economics
Department of Economics
MICHIGAN STATE UNIVERSITY
East Lansing, Michigan 48824

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Tschirley and Jayne are professors, International Development and Weber is professor in the Department of Agricultural Economics, Michigan State University. Arlindo is research analyst, Ministry of Agriculture, Mozambique, and Nijhoff and Mwiinga were researchers, MSU Food Security Research Project at the time of writing.

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EXECUTIVE SUMMARY

This paper examines the efficiency and effectiveness of emergency response in southern Africa through the lens of the 2002/03 food crisis in the region. The authors outline improvements in information and operational procedures needed to enhance the response to future events. They also discuss national and regional trade regime changes that would reduce the need for emergency response, and consider what lessons the 2002/03 crisis may have for the role of Strategic Grain Reserves (SGRs).

Market reform in the region has lead to more diversified production patterns (cassava production especially has grown), more decentralized food distribution systems, and more varied food consumption patterns at least in urban areas. Each of these changes should reduce the region's dependence on external food aid during droughts. Yet some researchers and policy makers have become concerned that many households in the region are becoming more vulnerable to shocks, not less. This apparent increase in vulnerability has become a standard part of the understanding of the 2002/03 food crisis.

A review of the chronology of early warning and response suggests that early warning clearly worked during the 2002/03 crisis. It alerted local governments and the international community to looming food shortages as the harvest was just beginning, provided quantitative estimates of the number of affected households and the need for food aid and commercial imports, regularly updated these numbers through effective communications, and mobilized public opinion and resources to meet enough of those estimated needs to largely avert a humanitarian crisis. The early warning and response process also reflected an exceptional degree of collaboration among governments in the region, the emergency response community, and donor agencies. The way in which the work of national Vulnerable Assessment Committees (VACs) was coordinated by the Southern African Development Community (SADC) Regional VAC and fed into donor and relief agency response is especially impressive.

Whether the early warning information was "right" is a different and more complex question. One way to approach the issue is to ask whether, if estimated food aid and commercial import requirements had been met, the crisis would have been stemmed without negatively affecting markets. Stemming the crisis required meeting the current food needs of those with neither the income nor the assets to do so themselves while allowing households to avoid coping mechanisms that increase their vulnerability to future crises. Nutritional monitoring during the crisis was spotty but suggested that wasting was well below levels that would cause alarm. Because wasting is a lagging indicator, it should ideally be complemented by information on the sustainability of household coping behavior. Unfortunately, very little such information has become publically available, even though "a substantial volume of data was collected through the VAC surveys which might have shed more light on food security and vulnerability." This is clearly an area that requires improvement.

Price behavior suggests great variation in market impacts across the region. Malawi created a major problem of oversupply late in the 2002/03 season and into the next, because it imported large amounts of grain commercially and as food aid, all through government channels, while

completely ignoring informal trade. Because the 150,000-250,000 metric tons of informal imports arrived more quickly, government was left with a comparable amount of grain that it could sell only at a loss. As a result, maize prices throughout 2003/04 were exceptionally low. In Zambia, the experience in 2002/03 showed that the private sector could import substantial quantities of grain when needed, but better operational mechanisms need to be designed between public and private sectors if the government is to be assured in future crises that the private sector will be able to import the quantities needed to keep prices stable. Mozambique provides evidence that this can happen on a regular basis when government simply stays out of the import business. Prices in Mozambique remained relatively stable during this crisis, and well below those in Zambia and Malawi.

White maize production and exports in the United States have trended upwards over the past decade. The U.S. market offers several potential benefits to the southern African region. First, production potential is huge, and can scale-up or down rapidly in response to market opportunities. Second, grain from the U.S. can often compete with that from South Africa in coastal areas like Mozambique. Finally, U.S. white maize is 99% guaranteed Genetically Modified Organism (GMO) free.

An efficient and effective response to future food crises in southern Africa requires that food aid agencies and practitioners realize that food aid is all too often the first choice in response rather than the last, that its targeting is often poor (though it has improved over the past decade), that even food insecure households will often prefer cash resources instead of food, and that innovative approaches to promoting market response could reduce the need for food aid while not compromising the humanitarian response. A balanced approach also requires that market proponents and food aid skeptics realize that *not* providing food aid and other transfers to vulnerable households during crises can push them into poverty and undercut their ability to use markets to ensure their food security in future crises. In other words, food aid and other transfers provided in a *timely manner* to the *right people* can widen the future scope for market response, not narrow it.

Information needs include improved food balance sheets, household budget shares and cross-price elasticities of demand among staples, improved market price information, data on the incidence of different household coping mechanisms, and household income shares together with an assessment of the likely impact of the crisis on the level of income from each source. Operationally, governments need much more actively to facilitate market response during crises, turning to food aid only if markets and market-facilitating measures are expected to be insufficient to meet immediate food needs and protect vulnerable households from excessive indebtedness or asset depletion.

Trade regulations in the region need to be simplified and harmonized. The paper provides a list of key areas for reform, but stresses that, at the same time, governments and donors in the region need to invest seriously in the professionalization of their customs services. What is needed is a customs service which facilitates legal trade, rather than the all-too-frequent pattern of using trade legalities to hinder open commercial trade and promote its informalization. Similar professionalization needs to take place among the market information services in the region.

Strategic Grain Reserves played no role in what has to be considered a successful response to the 2002/03 crisis. Yet SGRs are back on the policy agenda, despite the discouraging management record of such facilities in Africa. We suggest that government and donor time and money are likely to be better spent on continuing improvements to market information and early warning systems, on improved infrastructure for domestic food marketing, on more transparent policy toward external trade, and on market facilitating mechanisms that can be deployed when needed during crises.

CONTENTS

ACKNOWLEDGMENTS iii

EXECUTIVE SUMMARY v

LIST OF TABLES xi

LIST OF FIGURES xi

ACRONYMS xii

1. INTRODUCTION 1

2. BACKGROUND 2

3. THE 2002/2003 CRISIS 7

3.1. Origins of the Crisis 7
3.2. Early Warning and Response: Chronology 7
3.3. Early Warning and Response: Assessment 10
3.3.1. Food Security and Vulnerability 10
3.3.2. Market Impacts 12

4. THE EMERGING U.S. WHITE MAIZE MARKET 16

5. TOWARD MORE EFFICIENT AND EFFECTIVE EMERGENCY RESPONSE 18

5.1. Improved Information 19
5.2. Operational Improvements 21

6. TRADE REGIME ENHANCEMENTS TO REDUCE THE NEED FOR EMERGENCY RESPONSE 23

7. WHAT ROLE FOR STRATEGIC GRAIN RESERVES? 25

8. WRAPPING UP 27

REFERENCES 29

Appendix A: Seasonal Indices for Retail Maize Grain Prices in Mozambique, South Africa, Malawi, and Zambia 33

LIST OF TABLES

Table Page

1. Correlation Coefficients of Maize Production among Selected Southern African Countries, 1990-2003 3
2. Timing and Titles of FEWS NET/SADC Food Security Network Publications During 2002-03 Marketing Year 9

LIST OF FIGURES

Figure Page

1. The Contribution of Area and Yield Changes to Fluctuations in Maize Production in Seven Southern African Countries, 1990-2003 2
2. Principal Regional Trade Flows of Maize Grain in Southern Africa 4
3. Food Security, Vulnerability, and Market Demand for Food during Food Crises 11
4. Retail Prices of Maize Grain in US$/kg in Southern Malawi, Southern Mozambique, and Southern and Eastern Zambia (April 1994 - April 2004) 13
5. U.S. White Maize Exports by Destination, Calendar Years 1990-2003 16

A1. Seasonal Price Indices for Maize Grain in Selected Markets of Southern Mozambique (1994-2004) 31
A2. Seasonal Price Indices for Maize Grain in Southern Malawi (1994-2003) 31
A3. Seasonal Indices of Maize Grain Prices in Selected Markets of Zambia (1994-2003) . . . 32
A4. Seasonal Indices for Maize Grain Prices in South Africa (Randfontein 1996-2003) 32

ACRONYMS

ADMARC	Agricultural Development and Marketing Corporation
CFSAM	Crop and Food Supply Assessment Missions
CV	Coefficient of Variation
EGAT/AFS	Bureau for Economic Growth, Agriculture and Trade's Office of Agriculture and Food Security
EMOP	World Food Program Emergency Operation
FANRPAN	Food, Agriculture and Natural Resources Policy Analysis Network
FAO	Food and Agriculture Organization
FEWS NET	Famine Early Warning Systems Network
GMO	Genetically Modified Organism
HEA	Household Economy Approach
NEPAD	New Partnership for African Development
NFRA	National Food Reserve Agency
NGOs	Non Governmental Organizations
RVAC	Regional Vulnerability Assessment Committee
SADC	Southern African Development Community
SGRs	Strategic Grain Reserves
SIMA	Agricultural Market Information System
USAID	United States Agency for International Development
VACs	Vulnerability Assessment Committees
WFP	World Food Programme

1. INTRODUCTION

The southern Africa region can expect droughts of varying severity two or three times per decade. Because white maize is relatively intolerant to drought, and because it comprises a high share in the food budgets of middle- and low-income consumers in the region, these droughts have the potential to adversely affect the food security and future livelihoods of millions of rural and urban households. In similar fashion, the manner in which governments and donors respond to these droughts can have major impacts on government finances, on the private production and marketing systems on which these households primarily depend for their food security and livelihoods, and on their future ability to ensure their own well-being. The challenge facing governments and donors is to respond efficiently and effectively, using only as many resources as is needed to stem the current human costs of the crisis while building, or at least not undermining, households' ability to cope with future crises.

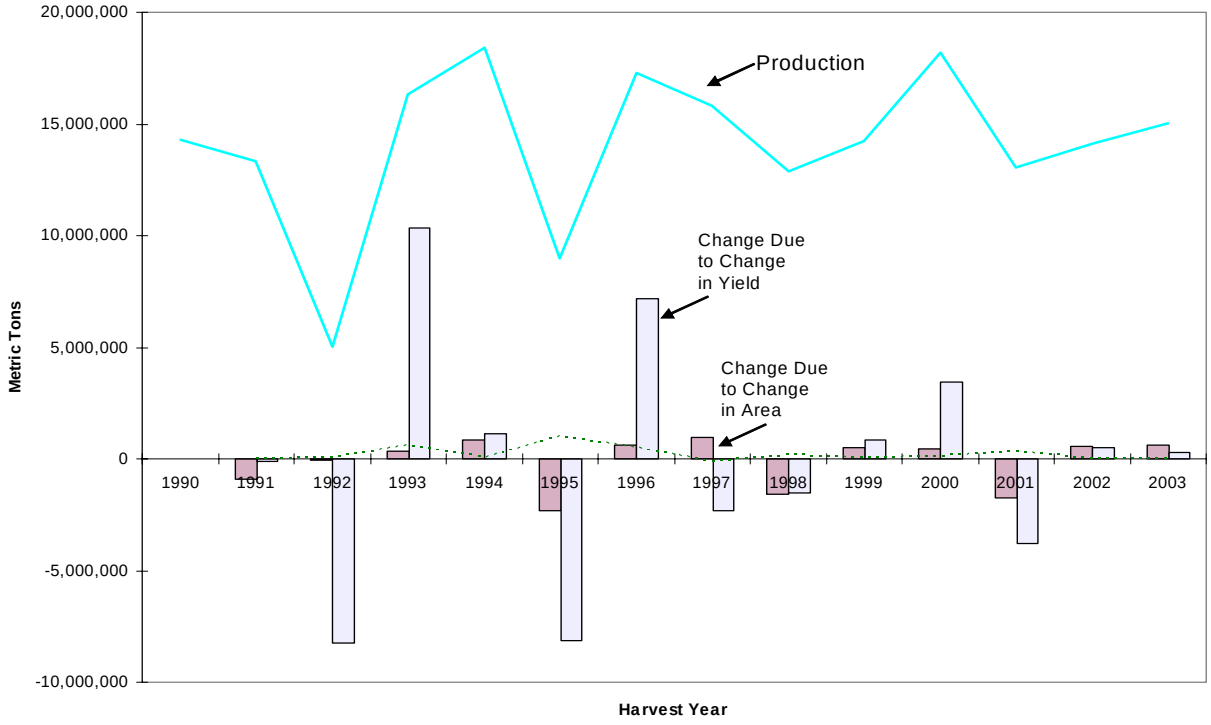
In this paper we examine these issues through the lens of the 2002/03 southern African food crisis. We present background to the problem in section two. Section three examines the 2002/03 crisis, laying out a chronology of the early warning and response efforts, and assessing them from two perspectives: the probable impact on food security and vulnerability and the adequacy of information to address this question, and impacts on markets. In section four we examine the emerging U.S. white maize market, and the role it has played in the past and may play in future southern African crises. Section five discusses the improved information and operational procedures that would help build on the success of the 2002/03 response in future events. Section six considers trade regime enhancements that could reduce the need for emergency response, while section seven briefly considers what lessons the 2002/03 crisis may have for the role of Strategic Grain Reserves (SGRs) in food crises. Section eight concludes.

2. BACKGROUND

Maize production in southern Africa is highly variable, with a median year-on-year change of nearly 20% over the past 13 years (Figure 1). In four of these years, the year-on-year change has exceeded 50%. Changes in yield, driven largely by rainfall fluctuations, have accounted for nearly three-quarters of this variation. The devastating regional drought of 1992 and the still serious but less severe event of 1995 can be clearly seen in the figure by the large drop and subsequent recovery of yields.

Production in the region has also been highly covariant, with large positive correlation coefficients in South Africa, Zambia, and Zimbabwe (Table 1). Two points are worth noting, however. First, while production in Mozambique covaries with that in Malawi, production in these two countries has not been significantly correlated with that of South Africa, Zambia, and Zimbabwe. In Mozambique, this pattern is driven by the predominance of the North in national production, and by the lack of correlation of weather patterns in this area with those in the rest of the region. For example, during the droughts of 1992 and 1995, production in northern Mozambique was largely unaffected. Since northern Mozambique regularly produces exportable maize surpluses, its lack of correlation with production in the region makes it a potentially important source of supply for both commercial and humanitarian responses to drought.

Figure 1. The Contribution of Area and Yield Changes to Fluctuations in Maize Production in Seven Southern African Countries[1], 1990-2003



[1] Mozambique, South Africa, Swaziland, Lesotho, Malawi, Zambia, Zimbabwe.
Source: FAOStat

Table 1. Correlation Coefficients of Maize Production among Selected Southern African Countries, 1990-2003

	South Africa	Zambia	Zimbabwe	Mozambique	Malawi
South Africa		0.52	0.67	0.26	0.26
		sig.	sig.	not sig.	not sig.
Zambia	0.52		0.63	-0.16	0.28
	sig.		sig.	not sig.	not sig.
Zimbabwe	0.67	0.63		-0.04	0.21
	sig.	sig.		not sig.	not sig.
Mozambique	0.26	-0.16	-0.04		0.58
	not sig.	not sig.	not sig.		sig.
Malawi	0.26	0.28	0.21	0.58	
	not sig.	not sig.	not sig.	sig.	

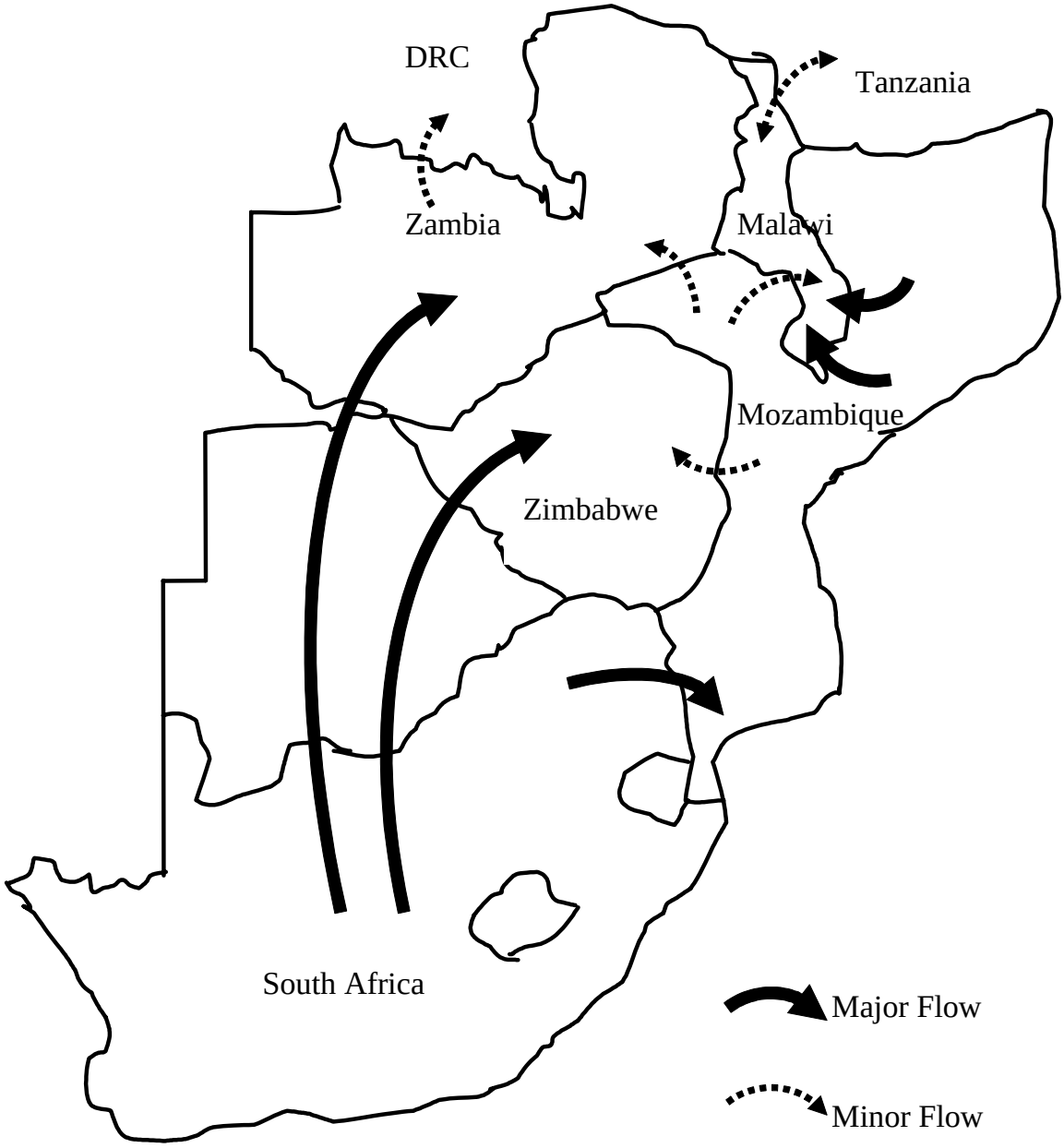
Second, the variance of regional production is less than that in each individual country. While the coefficient of variation of total regional production was 25% from 1990 to 2003, CVs in individual countries ranged from a low of 28% in South Africa to highs of 46% in Zimbabwe and 48% in Mozambique.[2] This suggests that, despite positive and large correlations in production across countries, there will be scope for intraregional trade to cover some portion of national and sub-regional shortfalls in all but the worst drought years (such as 1992).

The recent unrest in Zimbabwe has also reduced the covariance among countries. From 1990 to 2001, the correlation coefficient between production in South Africa and Zimbabwe was an astounding 0.93, falling to 0.67 when 2002 and 2003 are included in the calculation. As production begins to recover in Zimbabwe, one can expect that its high correlation with South Africa (and much of Zambia) will resume.

Figure 2 shows typical maize trade patterns in the region over the past five years. Maize flows year-round, every year from South Africa to southern Mozambique through formal commercial

[2] Mozambique's high variability is due primarily to steady increases in production since the drought and the ending of the civil war in 1992. The CV of production around a linear trend is only 19% from 1990 to 2003.

Figure 2. **Principal Regional Trade Flows of Maize Grain in Southern Africa**



channels. Maize also flows continuously into Malawi from northern Mozambique, through informal channels; this trade can increase dramatically in size and geographical scope when Malawi faces a crisis, as in 2002/03. South Africa becomes a major supplier to Zambia and Zimbabwe (and sometimes Malawi) when those countries suffer production shortfalls. Smaller,

primarily informal flows occur from northwestern Mozambique into Zambia, from central Mozambique into Zimbabwe, and from Zambia into the Democratic Republic of the Congo (DRC). Trade between Malawi and Tanzania can change direction and fluctuate greatly in size depending on relative supply conditions in each country. There is evidence that, during 2002/03, several tens of thousands of tons entered Malawi from Tanzania.

The share of maize in consumer energy consumption is high throughout the region, ranging from more than 60% in Malawi, Swaziland and Zambia to less than 25% in Namibia and South Africa, according to Famine Early Warning Systems Network (FEWS NET). Budget share data in Mozambique suggest that these shares may be overestimated, at least in that country. While FEWS NET places the energy share of maize in the range of 25%-39%, food budget shares for maize at the poverty line range only from 10% to 25% across the country, while urban shares are somewhat lower, falling as low as 5% in the capital city. Empirical work in Mozambique (currently under review) also shows strong countervailing seasonal patterns in budget shares between maize and cassava, suggesting a high level of substitution between the two crops, even in urban areas. In Malawi and Zambia, substitution with cassava can also be strong when maize is in short supply.

In summary, this brief review suggests that, while maize production in the region is unstable and covariant across several of the countries, intra regional trade could nevertheless play an important role in covering some portion of food deficits during all but the worst droughts. It further suggests that, while maize is the key staple food, substitution with cassava (and likely other staples) can substantially reduce its share when prices are high.[3]

Food policy in the region has historically both reflected *and accentuated* the importance of maize in the national economies. South Africa, Zimbabwe, and Zambia developed highly controlled and large-scale maize sectors and channeled the lion's share of producer and consumer subsidies into them. Malawi and Mozambique's systems were less vertically integrated and large-scale, but the Agricultural Development and Marketing Corporation (ADMARC) in Malawi and *Instituto de Cereais de Moçambique* (later Agricom, now also defunct) also focused heavily on maize. To this day, Zambia focuses its fertilizer subsidies and price supports on maize, Malawi orients its Starter Pack primarily toward maize, and Zimbabwe has returned to many of the maize-centric controls that it had begun to dismantle in the early 1990s. Only South Africa and Mozambique have maintained relatively commodity-neutral policy stances since they began reforming their food systems over a decade ago.

Yet despite a tendency by policy makers and some donors to continue focusing on maize, market reform has had major impacts on maize systems in the region. In every country (with the possible exception of Zimbabwe), the level of subsidy to and control of the maize sector has

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[3] Both these facts are increasingly recognized in the emergency response community. For example, SADC (2003b) argued strongly that "national maize production shortfalls could be filled through regional trade integration". SADC (2003a) explicitly recognized that inclusion of cassava in the food balance sheet in Zambia reduced forecast food gaps by 60%, and that informal cross-border trade into Malawi from Mozambique had a major impact on that country's food shortage. Others appear skeptical of the possibilities for substitution (Save the Children 2003).

fallen dramatically, with two principal effects. First, production patterns in more isolated or agro-ecologically less advantaged areas have begun to diversify away from maize, with cassava especially filling the gap.[4] Second, decentralized private food distribution systems have emerged to redistribute maize and other locally produced foods between surplus and deficit households within local areas and between surplus and deficit areas within countries and even across borders. These systems, based on small-scale milling and consumption of a wider range of types of maize meal, have proven far less costly than the older, more centralized and large-scale systems (Jayne et al. 1996). In Mozambique, this system has also resulted in lower prices, wider availability, and much wider consumption of imported rice than in the past.

Both these trends – more diversified production and more decentralized food distribution systems – should reduce the region's dependence on external food aid during droughts by broadening the consumption base and making it easier to move local surpluses to populations in need. Yet, at the same time some researchers and policy makers have become concerned that, driven by HIV/AIDS and persistent poverty, many households in the region are becoming more vulnerable to shocks, not less (Devereux 2002; Devereux 2003; Haddad and Frankenberger 2003; Frankenberger et al. 2003; Mano, Isaacson, and Dardel 2002). This apparent increase in vulnerability has become a standard part of the understanding of the 2002/03 food crisis. We now turn to a review of that crisis to discern what lessons might be learned regarding the efficiency and effectiveness of drought monitoring and response.

[4] See Zulu et al. (2000) for evidence from Zambia.

3. THE 2002/2003 CRISIS

3.1. Origins of the Crisis

The proximate cause of the 2002/03 food crisis in the region was back-to-back below average production in the region, which lead to very low incoming stocks in April 2002 and an estimated regional food deficit of 3.3m metric tons. Production in 2002 was slightly higher than in 2001, and had been lower than that level during five of the previous 12 years. Regional stock levels at the start of the 2002/03 marketing season, however, estimated at 329,000 metric tons, were at least 1.5m metric tons below the lowest level of the previous five years, and nearly 3m metric tons below those of the previous year (Mano, Isaacson, and Dardel 2003).

Thus, the 2002/03 food crisis was not caused by a production shortfall *per se*. Rather, it was caused by a combination of low incoming stocks, slightly below normal production, a perceived long-term increase in vulnerability among many rural households, especially in Malawi and areas of Zambia, and governance failures in Zimbabwe. These governance failures created a large deficit in that country and made it more difficult for food to reach deficit households whether through markets or through targeted distribution (Mano, Isaacson, and Dardel 2003; FEWS NET 2002).

3.2. Early Warning and Response: Chronology

Early warning infrastructure in the region at the time of the crisis consisted of national Vulnerability Assessment Committees (VACs) linked into the SADC Food Security Network. This network was coordinated by the SADC-FANR Regional Vulnerability Assessment Committee (RVAC). RVAC emerged one or two years prior to the onset of the crisis[5], in response to a perceived lack of effectiveness of the SADC Regional Disaster Management Technical Committee, which had been formed two years earlier (Mano, Isaacson, and Dardel 2003). The national VACs typically include participation of government, NGOs, and the UN agencies, Food and Agriculture Organization (FAO) and World Food Programme WFP). FEWS NET, funded by USAID, collaborated closely with this structure.

Two principal mechanisms were used to generate information on the crisis as it unfolded. During April and May of 2002, FAO and WFP conducted Crop and Food Supply Assessment Missions (CFSAM) in Lesotho, Malawi, Mozambique, Swaziland, Zimbabwe, and Zambia[6]. These CFSAMs generated initial estimates of the number of households in need of food assistance. In principle, these estimates were to be updated over the course of the crisis by a series of joint “rolling vulnerability assessments” carried out by the national VACs with support

[5] Save the Children (2003) indicates that RVAC was formed in “early 1999", while Mano, Isaacson, and Dardel 2003 simply say it was formed “prior to the onset of the emergency” (p. 4).

[6] These missions had already become standard annual features in some countries of the region prior to this crisis.

from the RVAC, FEWS NET, WFP, and others. The stated purpose of these assessments was to "identify who and where the most vulnerable populations are and . . . what level of support they may require" (Save the Children 2003).

Information from the joint assessments was published in three ways. FEWS NET had begun in late 2000 to publish monthly reports on the food security situation in the region, using the internet as the primary means of dissemination. By drawing on the work of the national VACs, collaborating closely with the RVAC, and posting these reports on the web every month during the crisis, FEWS NET played a key role in making information widely available on the crisis. FEWS NET complemented these monthly reports with twice monthly *Executive Overviews* which attempted to summarize information in an actionable form for decision makers. Finally, at least three regional assessments were published during the crisis, in July, September, and December. The July assessment was published by FEWS NET as a Position Paper; assessments in September and December were published by SADC RVAC as Regional Food Security Assessment Reports. All these reports were available on the website for SADC (http://www.sadc.int/index.php) and FEWS NET (http://www.fews.net/south/).

There has been some complaint that initial reactions by government and donor agencies to the warnings in April 2002 were skeptical, thus delaying immediate action (Mano, Isaacson, and Dardel 2003; Save the Children 2003; SADC Food Security Network 2002e; SADC Regional Vulnerability Assessment Committee 2002). Yet an evaluation of the chronology of early warning and response (Table 2) suggests that, despite concerns during the crisis, the response was in fact quite timely. Warnings were first made public in April 2002, before the harvest had even begun in some areas.[7] By May, the FAO/WFP Crop and Food Supply Assessment Missions had estimated that 1.2m metric tons of food aid would be required to help fill the gap. These data were reported in the June report, along with an estimated food gap of nearly 3.2m metric tons. The World Food Program launched its Emergency Operation (EMOP) between April and June[8], stating that "approximately 13 million people are facing a severe food crisis over the next nine months". By September, RVAC was estimating that 14.4m people required over 1m metric tons of food aid to cover a total food gap of 3.3m metric tons. By December, the estimated number of affected persons had climbed to 15.25m. Throughout the crisis, the food gap and progress toward meeting it were highlighted, and other relevant information (such as the GM maize controversy) was presented. The role of commercial markets in filling the gap was also highlighted and policies to improve their contribution were discussed. FEWS NET and SADC Food Security Network also worked with FANRPAN to publish an assessment of the previous year's experience in April of 2003, just as the crisis was ending with improved production and incoming stocks for the 2003/04 marketing season.

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[7] Much work was going on behind the scenes prior to this time to make the case that a potential calamity was in the making, due to back-to-back poor harvests. See Save the Children (2003).

[8] Darcy and Hofman (2003) indicate that the program was launched in April while Mano, Isaacson, and Dardel 2003 indicate June.

Table 2. Timing and Titles of FEWS NET/SADC Food Security Network Publications During 2002-03 Marketing Year

Month, Year	Title of Monthly Report	Key Content of Monthly Report
April 2002	FEWS NET Monthly Report *Production Shortfalls Imminent* (SADC 2002a)	Maize production by country in 2001 and 2002 compared to five year average; special focus on problems in Zimbabwe; assessment of South Africa's ability to cover the regional deficit
May 2002	FEWS NET Monthly Report *Food Security Crisis Deepens* (SADC 2002b)	Graph of regional production plus stocks (total availability) vs. consumption over past eight years, showing largest deficit since 1995; discussion of how to fill the gap, including mention of U.S. white maize availability; assessment of transport corridor capacity to handle imports.
June 2002	FEWS NET Monthly Report *Shortages, Higher Prices in Region* (SADC 2002c)	Report on FAO/WFP CFSAM. First quantitative estimate of import needs (3.18m MT), embedded in text of report; discussion of price rises in some markets of Malawi and Zimbabwe.
July 2002	FEWS NET Monthly Report *Regional Cereal Shortage, Import Challenge* (SADC 2002d)	Maps and table of estimated import requirements for 11 countries in region. Report on WFP Regional Emergency Operation (EMOP) for six most affected countries (Mozambique, Malawi, Swaziland, Lesotho, Zambia, Zimbabwe), SADC FANR monitoring and response plans, and UN Consolidated Appeal.
	FEWS NET Position Paper *Is a Famine Developing in Southern Africa?* (FEWS NET 2002b)	First use of regional map on front page with (qualitative) summaries of food security situation for key countries.
August 2002	No reports	
September 2002	FEWS NET Monthly Report *Imports Lag, International Response Inadequate* (SADC 2002e)	Updated import requirements, and progress toward meeting them; statement on GM maize controversy in region.
	First SADC RVAC Regional Food Security Assessment Report: (SADC RVAC 2002)	Regional map for six most affected countries on front page, with number affected and import requirements; report on results of first rolling food security assessment, including information on wasting, coping mechanisms; prospective information through end of current season; section for decision makers.
October 2002	FEWS NET Monthly Report *Assessments Point to Rising Needs* (SADC 2002f)	Updated import needs and "slow progress" in filling them; Child wasting estimates from national VACs; climate forecasts for current growing season.
November 2002	No reports	
December 2002	FEWS NET Monthly Report *Food Security Prospects Worrisome* (SADC 2002g)	Update on "poor rainfall performance" for current growing season and likely impact on continuing crisis; Update on "large remaining cereals gap" that will be "difficult to fill."
	Second SADC RVAC Regional Food Security Assessment Report (SADC RVAC 2003)	Updated regional map with number affected and import needs; food aid progress and plans; review of market prices; HIV/AIDS impacts on food security; statement that "in general wasting levels are still not a cause for concern" but noting "scanty data."
January 2003	No report	
February 2003	FEWS NET Monthly Report *Signs of Improving Food Security Conditions* (SADC 2003a)	Report on anticipated 2003 harvest and likely import needs; report on most recent vulnerability assessments.

The response from the international community was relatively swift, though food aid quantities did not meet the estimated need. By December, 395,000 MT of food aid had been received, and 1,359,000 MT of commercial imports had arrived. This meant that over half the estimated food gap of 3.3m MT had been filled by registered inflows into the region. Estimates of informal imports are of course difficult to make, but they appear to have played a major role in Malawi (see below for more detail). By the end of March 2003, 77% of the regional food aid appeal had been "committed" by donors.

Unfortunately, it is not clear how much food aid had actually arrived in the region by this time, and how much of this had reached beneficiaries. An official final accounting of this type, made widely available, would be very useful to more fully assess the experience. Nonetheless, it seems clear that less – perhaps substantially less – than three-quarters of the anticipated food aid requirement had reached beneficiary households by the time the new harvest was coming on in April 2003. Despite this, there was widespread agreement that the response had been "sufficient to help governments avoid a humanitarian crisis and potential famine" in the region (Mano, Isaacson, and Dardel 2003).

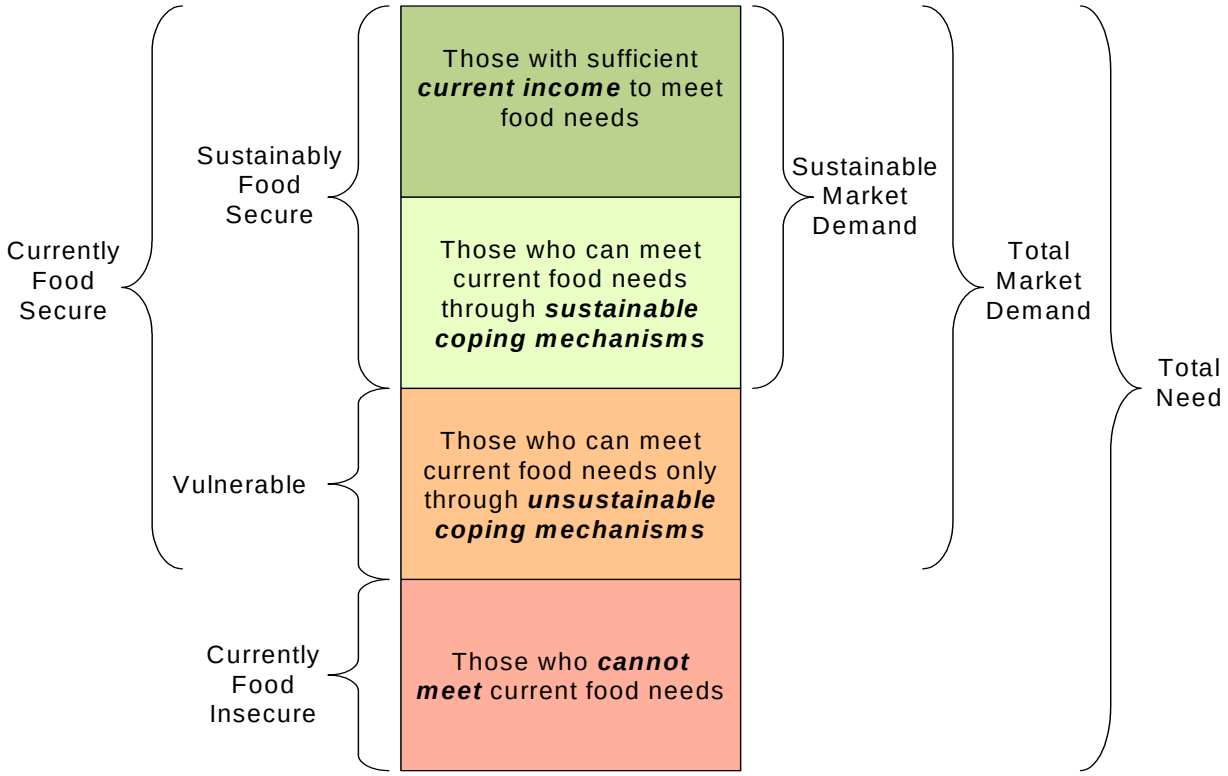
3.3. Early Warning and Response: Assessment

Early warning clearly worked during the 2002/03 crisis. It alerted local governments and the international community to looming food shortages as the harvest was just beginning, provided quantitative estimates of the number of affected households and the need for food aid and commercial imports, regularly updated these numbers through effective communications, and mobilized public opinion and resources to meet enough of those estimated needs to largely avert a humanitarian crisis. The early warning and response process also reflected an exceptional degree of collaboration among governments in the region, the emergency response community, and donor agencies. The way in which the work of national VACs was coordinated by the SADC Regional VAC and fed into donor and relief agency response is especially impressive. Darcy and Hofman (2003, p. 43) consider it a "striking example of a coordinated multi agency assessment process" and suggest that the assessment methods, driven primarily by the Save the Children (UK) Household Economy Approach (HEA), achieved greater standardization than has been typical in past crises.

3.3.1. Food Security and Vulnerability

Whether the early warning information was "right" is a different and more complex question. One way to approach the issue is to ask whether, if estimated food aid and commercial import requirements had been met, the crisis would have been stemmed without negatively affecting markets for maize and other staple foods in the region. In addressing this question, we need to be aware of the nature of food security (current and future) and market demand for food during a food crisis (Figure 3). By definition during any food crisis, the total need for food exceeds total market demand. What may be "known" but not always fully appreciated is that total market

Figure 3. Food Security, Vulnerability, and Market Demand for Food during Food Crises



demand during a crisis is driven not just by current income, but also by varying levels of savings draw-down, increased indebtedness, and asset liquidation. Among those households engaging in these coping mechanisms to meet current food needs, some may be doing so at "normal" or "sustainable" levels, while others may be undermining their ability to deal with future food crises. Thus, a fully effective response to a food crisis will meet the current food needs of those with neither the income nor the social and financial assets to do so themselves – the current food insecure – and will also allow households to avoid engaging in coping mechanisms, including asset liquidation, that increase their vulnerability to future crises. This is at the heart of the argument in the recent vulnerability literature (Haddad and Frankenberger 2003; Frankenberger et al. 2003; House of Commons 2003; Save the Children 2003).[9]

National nutrition surveys were done in four of the six most affected countries during August of 2002. These surveys found that wasting levels among children less than fives years of age were "below the 10-15% level expected in a severe food crisis" (Mano, Isaacson, and Dardel 2003). This may not have been surprising, given that the hungry season in the region does not generally start until late in the year and even during a crisis should not be widespread by August. Later

[9] Figure 6 (p. 27) in House of Commons (2003), referencing Kabeer (2002), provides a helpful ranking of coping strategies by level of "reversibility", which is a proxy for impact on vulnerability, and order of onset during a crisis.

evidence was more spotty (a national survey in Mozambique and more localized surveys in some other countries), but continued to indicate that wasting levels were below – even well below – levels that would cause alarm. These types of information are the basis on which a consensus ultimately formed regarding the adequacy of the response to this crisis.

The problem with wasting data is that it is a lagging indicator, showing up only after households have begun to exhaust their coping strategies, many of which might undermine their ability to cope with future crises. Unfortunately, very little information has become publicly available to assess the extent to which households engaged in unsustainable coping mechanisms during the crisis. Darcy and Hofman (2003, p. 43) indicate that "a substantial volume of data was collected through the VAC surveys which might have shed more light on food security and vulnerability, but much of that data went unanalysed". This is clearly an area that requires improvement; see section 5.1 for more detail.

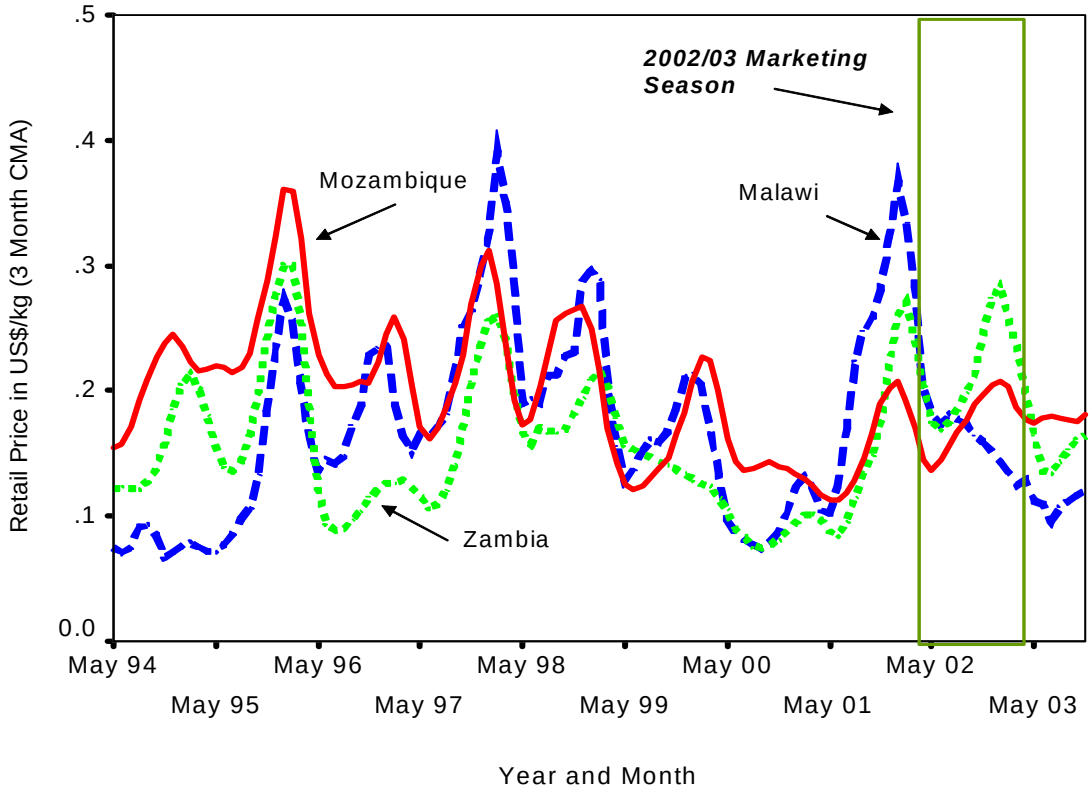
3.3.2. Market Impacts

Price behavior suggests great variation in market impacts across the region (Figure 4). In *Malawi*, prices reached extremely high levels the year prior to the 2002/03 crisis. Much has been written about this 2001/02 crisis, with some referring to it as a famine and even "the worst famine in living memory" (Devereux 2003; see also Save the Children 2003). This paper will not address whether these claims were justified, nor the reasons for the very high prices in early 2002[10]. What is clear is that the 2001/02 crisis and the muted official response to it unleashed a social and political dynamic that made government and donors especially sensitive about potential future crises (House of Commons 2003, p. 29). In addition, Malawi has a long history of heavy government involvement in domestic maize markets and maize trade, earlier through a very strong ADMARC and for the past two to three years through a weakened ADMARC complemented by the better financed National Food Reserve Agency (NFRA). Thus, when decision makers in Malawi were presented with a food balance sheet in May 2002 that forecast a deficit of 433,000 metric tons for the 2002/03 season[11], they acted promptly. The country imported 253,000 metric tons of maize grain entirely through government channels (NFRA), and arranged for 151,000 metric tons of food aid, for a total formal inflow of more than 400,000 metric tons, nearly covering the forecasted deficit. Despite very large informal flows of white maize from Mozambique into southern Malawi in 1997/98, 1998/99, and 2001/02, decision makers did not take any of this potential flow into account in their plans. Best estimates are that, during the 2002/03 season, 150,000-250,000 metric tons of maize entered Malawi informally

[10] As we will see below for Zambia, while price spikes are always caused by a lack of supply relative to demand, government actions can often contribute to rather then help avoid such spikes.

[11] Malawi's food balance sheet includes estimates of both maize and cassava production, and expresses import needs in terms of maize equivalents.

Figure 4. Retail Prices of Maize Grain in US$/kg in Southern Malawi, Southern Mozambique, and Southern and Eastern Zambia (April 1994 - April 2004)



Note: Malawi prices are composite of incomplete series in Nchalo, Luchenza, and Nsanje; southern Mozambique is simple average of complete series in Maputo, Xai-Xai, and Maxixe; Zambia is simple average of complete series in Lusaka, Choma (south), and Chipata (east).

from Mozambique, leaving the country with a maize surplus of about the same amount (Whiteside 2003). In March 2003, facing a good incoming harvest and the prospect of storing maize for over a year, the government decided to sell some of its stock at very low prices.

The impacts of these actions on maize markets are apparent in Figure 4. From their peak in February 2002, prices in both US$ (shown in the graph) and nominal Kwacha terms declined nearly continuously until June 2003, the longest period of sustained price decline in at least ten years. Mean prices during calendar year 2003 were comparable to those in 2000, lower than any year since 1995, and less than two-thirds the levels in Zambia and southern Mozambique. While such low prices were clearly a benefit to consumers, they provided little incentive to farmers, and also reflected very large government costs for holding stock and for selling at prices that did not cover costs. Finally, by eliminating any seasonal price rise during the 2002/03 marketing

season and pushing prices near historic lows, government may have exacerbated two medium- to long-
term problems. First, it eliminated incentives for private traders to store grain, and also reinforced the sense, developed over past experience, that future shortages may not necessarily provide profit opportunities for importers. This undermines market development and consumer interests.[12] Second, it reduced prices received by Mozambican farmers, thus reducing their incentive to produce for the Malawi market; since Mozambican farmers could be the most reliable suppliers of maize to Malawian consumers for many years to come, reducing their production incentives runs counter to Malawi's long-term interests.

Government in Zambia has in the past frustrated private imports during food shortages by sending confusing signals to markets. Such confusion was evident during the 2001/02 food crisis (the year prior to the focus of this paper). During that year, government announced its intention to import 200,000 metric tons of maize grain to cover a national deficit, and to sell that grain at below market prices directly to a small number of selected large millers. Given this announcement, other potential private importers held off. When government instead imported only 130,000 metric tons and did so very late in the season (December and January), prices rose steeply (Nijhoff et al. 2003; see also Nijhoff et al. 2002). Because grain was channeled to large millers, consumers also had to pay the high price of refined meal rather than having the option of purchasing less expensive grain and milling in a local hammer mill.

During the 2002/03 season, government worked with private traders to agree on an import target of 300,000 metric tons. By February 2003, private sector had imported only 100,000 metric tons and government made no commercial imports, though it did arrange for more than 100,000 metric tons of food aid. Price patterns and levels were nearly identical to those the year before; during both years, seasonal peaks were well above any since early 1996 (after the severe 1995 drought). Some suggest that confusing signals from the government lead private sector to reduce its imports, in similar fashion to previous years (Mano, Isaacson, and Dardel 2003). Thus, the experience in 2002/03 did show that the private sector could import substantial quantities of grain when needed, but clearly better operational mechanisms need to be designed between public and private sectors if the government is to be assured in future crises that private sector will be able to import the quantities needed to keep prices stable.

Mozambique provides evidence that this can happen on a regular basis when government simply stays entirely out of the import business. The south of Mozambique holds the largest urban

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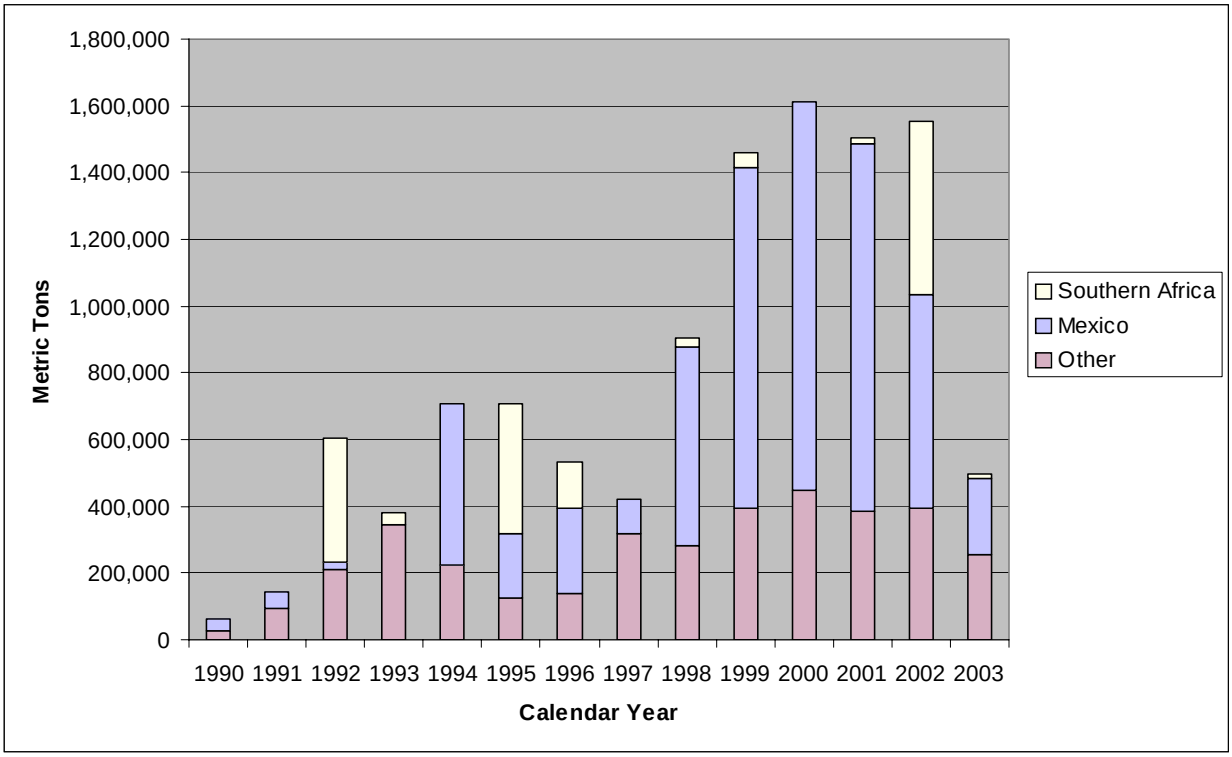
[12] Arguing that trader profit opportunities are important for the well-being of consumers – and not just traders – rests on the empirical regularity that more highly developed markets throughout the world generate far less seasonal variation in prices than do underdeveloped markets. For example, typical seasonal increases in retail maize grain prices in South Africa are less than 20%, compared to 50% in southern Mozambique, over 90% in southern Malawi, and about 65% in Zambia (see Appendix A). Within a given country, larger more developed markets show less seasonality than smaller outlying markets: Maputo's typical seasonal price rise is about half that of outlying markets in the south, and Lusaka's is about three-quarters that in smaller southern markets. Note also that Malawi, with perhaps the most comprehensive government involvement in maize markets in the region, nominally with the purpose of stabilizing prices for consumers, shows the *highest* seasonal price movement. Mozambique, with no direct government involvement in the market, shows the lowest (except for South Africa).

population and is perpetually in deficit in staples, while the center is typically but not always in surplus (it was affected to some degree by the 1992, 1995, 2001, and 2002 droughts). The north produces a surplus every year. In response to this production pattern and to the long distances and high costs of transporting maize from the north to the south, Mozambique has maintained open borders to maize and other trade, regularly exporting from the north and importing to the south. Largely for this reason, prices in Mozambique remained relatively stable during this crisis, and well below those in Zambia and Malawi. Relative to peak prices over the past ten years, peaks in 2002 and 2003 exceeded only those of 2001.

4. THE EMERGING U.S. WHITE MAIZE MARKET

White maize production in the United States has trended upwards over the past decade, and exports have done the same. From less than 100,000 metric tons in 1990, commercial exports grew to an average of about 1.5m metric tons between 1999 and 2002 (Figure 5). Notably, exports to southern Africa have spiked during each of the region's crises, approaching 400,000 metric tons in 1992 and 1995, and exceeding 500,000 metric tons in 2002. Because these are calendar year data, the 2002 figure likely reflects response to both the 2001/02 and 2002/03 crises.[13] Exports fell in 2003 due to policy changes in Mexico, leaving a large stockpile for potential export to southern Africa during the 2003/04 marketing season. In fact, more than 80,000 metric tons were exported to the region in January and February 2003, but the flow declined after regional harvest prospects improved and prices fell sharply.

Figure 5. U.S. White Maize Exports by Destination, Calendar Years 1990-2003



Source: USDA-AMS Grain Inspections for Export by Country of Destination, as compiled by M.T. Weber

[13] Much of the response to the 2001/02 crisis took place late, early in calendar year 2002, while most of the response to 2002/03 was more timely, taking place during the last half of 2002.

The U.S. market offers several potential benefits to the southern African region. First, production potential is huge, and can scale-up or down rapidly in response to market opportunities.[14] Second, highly efficient transport and contracting mechanisms mean that grain from the U.S. can often compete with that from South Africa in coastal areas like Mozambique. In fact, the largest miller in Mozambique imports grain regularly from the U.S., mixing it with South African grain to produce its meal. The greatest reason cited by this miller for not relying entirely on South African grain was the expensive and unreliable rail transport provided by Spoornet.[15] Finally, U.S. white maize is 99% guaranteed GMO-free, a key issue for Zambia in 2002/03 and a potentially important issue in future crises.

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[14] White maize in the U.S. does not receive commodity program subsidies as does yellow maize. Production is driven entirely by market demand and prices.

[15] At least three large- and medium-scale traders in South Africa have confirmed that the quality of service from Spoornet is "bad and getting worse". (Personal interviews, July 2004)

5. TOWARD MORE EFFICIENT AND EFFECTIVE EMERGENCY RESPONSE

An efficient and effective response to future food crises in southern Africa will provide enough food aid to meet the needs of two groups of people: those unable to meet their own current needs; and those who can do so only by engaging in unsustainable asset liquidation and other coping mechanisms that undermine their ability to handle future crises (Figure 3). At the same time, an efficient and effective response will rely on and encourage private markets to provide food from the lowest cost sources to those who have the ability, whether through current income or sustainable coping mechanisms, to purchase it. It will not provide so much food aid that current and future market response is inhibited, nor will it rely so much on markets that household vulnerability is increased. Echoing Barrett and Maxwell (2004, Chapter 6), it will help households avoid and climb out of *poverty traps* while at the same time keeping donors out of the all too common *relief trap*.

Striking this balance requires that food aid agencies and practitioners such as NGOs and the World Food Program realize that food aid is all too often the first choice in response rather than the last; that its targeting is often poor (though it has improved over the past decade and the vulnerability assessments in southern Africa during 2002/03 are an example of this); that even food insecure households will often prefer cash resources instead of food[16]; and that innovative approaches to promoting market response, tested and rolled out in a phased manner, could reduce the need for food aid while not compromising the humanitarian response. A balanced approach also requires that market proponents and food aid skeptics realize that *not* providing food aid and other transfers to vulnerable households during crises can push them into poverty and undercut their ability to use markets to ensure their food security in future crises. In other words, food aid and other transfers provided in a *timely manner* to the *right people* can widen the future scope for market response, not narrow it.

An efficient and effective mix of food aid and food markets in emergency response requires conceptual clarity, accurate information, and a willingness of relief agencies to use these concepts and information to step out of established modes of behavior and learn new approaches. Conceptual clarity is needed regarding sustainable and unsustainable coping mechanisms, to distinguish those that are a normal part of rural households dealing with risk and shocks in a poor African context from those that either push households into chronic poverty or prevent them from escaping it. Progress has been made in this regard in recent years, clustered around the "vulnerability" literature (Devereux 2002; Frankenberger et al. 2003; Haddad and Frankenberger 2003; House of Commons 2003; Save the Children 2003; Skoufias and Quisumbing 2002) and the concepts of safety nets, cargo nets, poverty traps, and relief traps (Barrett and Maxwell 2004). Thus, while much of the conceptual infrastructure may be in place to achieve an efficient and effective emergency response, great progress needs to be made in

[16] Barrett and Maxwell (2004, Chapter 7 and Figure 7-1) provide evidence from a large sample survey in Ethiopia that even food insecure households prefer cash transfers rather than food, as revealed by their willingness to accept a lower effective wage rate in cash than in food. This finding, if it holds up in other settings, challenges the frequent assumption that markets will not operate effectively in remote areas during food crises.

developing systems to provide the required information and in using that information in actual response.

5.1. Improved Information

Improved information is needed in at least five areas. First, countries and relief agencies need *better food balance sheets*. As unsatisfactory as this approach might be for those steeped in concepts of rural livelihood and income strategies, they are now and will likely remain the starting point in emergency planning. Thus, improvements in the comprehensiveness and accuracy of these sheets will have a high payoff. Better balance sheets will require inclusion of roots and tubers as well as better estimates of their production and harvestable in-ground stocks. Several countries took a positive step in the 2002/03 crisis by including cassava in the food balance sheets, but some suggested that the data were inaccurate and may have lead to underestimates of the magnitude of the crisis[17]. Official maize production data are also suspect in some countries of the region, while data on cereals such as millet and sorghum (which can make-up an important portion of household food budgets in some areas) are even more problematical. Breaking production information down by region within a country is also important in a place like Mozambique, where it is uneconomical to transport maize or any other staple from the surplus north to the south, and in places like Zambia and Mozambique where cassava production and consumption have strong regional dimensions.

Second, planners need information on *household budget shares and cross-price elasticities of demand* among staples, broken down by income level. Empirical research over many years has shown that households, especially the poor, are strongly price sensitive in their consumption patterns. Combining such budget share data with improved and more comprehensive food balance sheets will begin to provide the broader view that is needed to avoid built in biases toward overestimating food aid needs in crises. It should also help resolve the potential contradiction, raised earlier in the paper (p. 5), between data reported by FEWS NET on maize's calorie share in Mozambique and budget share data that suggest a lesser role for maize. Nearly every country in the region has a relatively recent household income and expenditure survey that would lend itself well to the calculation of these parameters. While budget shares may vary substantially from year to year, cross-price elasticities of demand are likely to remain relatively stable, especially if they are calculated by income level.

Third, planners need *improved market price information*. This information should include price levels and trends for at least maize, cassava, and rice. Such information is crucial for estimating the impact of the crisis on households' purchasing power, and also to combine with cross-price elasticities and production estimates to assess the scope for substitution in consumption. Point-in-time price levels for millet and sorghum may also be important, depending on the location of the crisis. Simple seasonal indices for the major staple crops would provide valuable information to put current price rises into context. Spatial price differences between surplus and deficit areas within and across countries are also crucial. These data should be combined with

[17] In the context of the 2001/02 crisis, Devereux (2003) says simply that the figures "were wrong", while Save the Children (2003) criticizes the inclusion of tubers without stating why.

simple models to predict likely internal and regional informal trade flows.[18] Point-in-time price levels in outlying markets that may not be monitored on a continual basis are very important leading up to and during a crisis. During the onset of a crisis, such prices are needed to assess the degree to which supplies in more accessible areas are reaching more remote areas through markets. During the crisis response, these data are needed also to determine whether food aid distributions are reaching intended beneficiaries and not depressing markets. Finally, these systems need to track price trends for food staples and the assets – especially livestock – that tend to be liquidated during crises; plummeting livestock:staple price ratios are a classic indicator of mounting vulnerability as increasing numbers of households sell livestock to purchase staple foods.

Few of the existing market information systems in the region are currently capable of providing this type of information.[19] The payoff to generating this information within an officially recognized system would be very high, because governments and donors, sometimes with good reason, tend to discount *ad hoc* accounts from NGOs and others as being partial, anecdotal, and perhaps biased. Thus, increased investment is needed throughout the region in strong national market information systems that are commercially oriented but at least partially publically financed[20]. Market information from such a system is likely to be viewed as more valid and accurate than the same type of information generated by early warning and emergency response agencies, who may be seen as interested parties.

Fourth, planners need information on the *incidence of different coping mechanisms* by households, classified by their likely order of appearance during a crisis (and thus implicitly by their level of sustainability; see Kabeer 2002), and compared to some baseline. Simple questionnaires can collect this information, along with the levels of a range of household assets that might be liquidated over the course of a crisis. These surveys should be applied to a statistically designed sample to ensure greater acceptance by decision makers. Most countries in the regions have well-designed sample frames that could be relatively easily adapted for these purposes. Decisions on whether to add anthropometric modules to such surveys to estimate *wasting incidence* need to be taken on a case-by-case basis. Such modules would substantially increase the complexity and cost of the data collection exercise and thus risk making it less timely or more limited in scope. Also, wasting is a lagging indicator that does not necessarily help in anticipating future needs. Nonetheless, some data of this type can be very useful, if time and finances allow, to provide greater quantitative depth to assessments of the problem.

These monitoring surveys oriented toward tracking household level vulnerability need to be complemented by empirical research that examines the widespread perception of long-term increases in vulnerability in the southern African region. National household surveys, while not

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[18] See Whiteside (2003) for very useful suggestions on how to go about estimating likely volumes of informal flows between Mozambique and Malawi.

[19] Mozambique's *Sistema de Informação de Mercados Agrícolas – SIMA* – is one exception, though even it would need strengthening to provide this whole set of information.

[20] See Section 6 for further thoughts on the management and financing of market information systems.

providing an exhaustive set of information for this purpose, will go a long way toward establishing trends in key asset holdings and productivity levels, and provide the advantage of statistically representative samples that will typically allow breakdowns to at least the provincial level. Some countries in the region have already developed or are planning to develop panel surveys, which would be especially powerful in examining this issue.

Finally, *household income shares* and an assessment of the likely impact of the crisis on the level of income from each source can be very useful in determining the balance between food aid, cash transfers, and market responses. These income shares should be expressed by income level, and should distinguish between cash and in-kind income and between income earned from agricultural and non-agricultural sources, preferably with some disaggregation within each of these broad categories.

5.2. Operational Improvements[21]

We suggest that emergency operations follow a three-step process. First, they should *start by focusing on markets*. Agencies and government should determine what markets are capable of in terms of the volume of additional grain they can bring to the country through commercial imports (both formal and informal), geographical areas they can cover, and proportions of the population in these areas that will have sufficient purchasing power, at expected price levels, to ensure a minimally adequate diet.

Next, governments and emergency planners should take concrete measures to *facilitate market response*. Food markets in developing countries suffer from high unit costs for domestic marketing, constrained access to foreign exchange and credit to finance food imports, and frequent policy constraints that further limit import response. Combined, these factors can, in the short-run during a crisis, lead to skyrocketing food prices. This is especially true when the crisis affects an entire region rather than a country, as in a widespread drought in southern Africa. Yet governments can, with selected assistance from donors, put in place temporary and longer-term measures which may dramatically increase the ability of markets to respond to these crises. Eliminating policy barriers to trade and ensuring more transparent statements and actions by government regarding food imports should always be the first steps; Mozambique has shown that this open and clear policy stance greatly facilitates trade's contribution to stable prices and food security. See Section 6 for specific recommendations in this regard.

Additional balance of payments support from donors or a foreign exchange credit facility for use in importing food staples may be called for if import needs threaten macroeconomic stability. Additional measures could include direct cash transfers to affected households where markets could work but purchasing power may be limited, cash for work if done early enough that households' health is not already compromised, and even temporary transport subsidies on specific routes. Direct cash transfers and cash for work projects should be well publicized,

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[21] This section draws heavily from Tschirley (1998). See also Barrett and Maxwell (2004, Chapter 10) for an extensive discussion of operational reforms needed in food aid programs.

including timing, location, and total cash to be disbursed, to ensure that traders realize ahead of time that there will be increased purchasing power in the area.

Finally, planners should *turn to food aid* if markets and market-facilitating measures are expected to be insufficient to meet immediate food needs and protect vulnerable households from excessive indebtedness or asset depletion. These food aid programs should be designed to cover only those geographical areas and populations that markets are not expected to cover. Vulnerability assessments to assist in targeting, as was done in southern Africa in 2002/03, should be an important part of this response. In addition, because even the best designed emergency programs can have important effects on markets, governments and relief agencies need aggressively to make information about the food aid program widely and publically available. If traders fear that food aid quantities will be too large or poorly targeted, they will reduce the amount of food they import, further increasing the burden on the food aid program.[22]

[22] See Tschirley, Donovan, and Weber (1996) for more on how emergency and commercial programs need to work together to not crowd out markets.

6. TRADE REGIME ENHANCEMENTS TO REDUCE THE NEED FOR EMERGENCY RESPONSE

The most basic reforms that governments in the region need to make to improve emergency response are to focus their own actions on such response, to be transparent, detailed, and timely in sharing information about response plans, and to give the private sector full latitude to decide, in light of this information, what volume of commercial imports to procure. Such an approach will go a long way toward avoiding the kinds of problems seen in Zambia in 2001/02 and previous years, when the private sector held off importing due to lack of clarity regarding government import plans; or in Malawi in 2002/03, when prices collapsed because government brought in far too much grain in food aid and government-mandated imports.

This approach requires eliminating recourse to export bans and progressively reducing other non-tariff barriers to trade. Regarding the latter, one can make a long list of needed changes: harmonize phyto-sanitary standards, maximum weight limits, and insurance requirements; simplify and harmonize trade documentation and make government agencies which provide this documentation more accessible; clarify and define more narrowly when physical inspections are necessary [23]; and relax rules of origin within the SADC Trade Protocol. What such a list would highlight, however, is that trade regulations – and the bureaucracies that exist to enforce them – exist for good reason: crop diseases need to be contained; roads can be damaged by trucks that carry excessive loads; insurance generally has a high social and private payoff; and government has a legitimate interest in knowing the volume of trade crossing its borders. While the regulations themselves can often be unduly complicated or restrictive and, thus, constitute barriers to trade, the more fundamental issue may be that the bureaucracies enforcing them are typically staffed by under-trained and poorly remunerated individuals with little vision of the purpose of their job. For example, export permits *per se* do not need to be barriers to trade. They become such when there are too few or poorly placed offices for obtaining them, and when the staffs in those offices either do not know the regulations, or use their power to supplement their meager incomes, or are not in the office because they are doing other things to supplement those incomes.

This line of reasoning suggests that, at the same time that they take the steps outlined above to simplify and harmonize trade regulations, governments and donors in the region need to invest seriously in the professionalization of their customs services. What is needed is a customs service which facilitates legal trade, rather than the all-too-frequent pattern of using trade legalities to hinder open commercial trade and promote its informalization. Customs officials, at both operational and managerial levels, are much more likely to buy-in to such a vision if they have sufficient levels of education and technical training, receive adequately remunerative salaries on time, and have the equipment needed to do their jobs. In the absence of such professionalization, changes in formal rules are likely to proceed at a very slow pace and be, at best, unevenly applied when they do arrive.

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[23] Nathan Associates (2004, p. 4-27) report that in some border locations more than 50% of exports are physically inspected.

Similar professionalization needs to take place among the market information services in the region. Three key changes need to be made. First, these services need to see their role as promoters of trade, not just reporters of trade. This requires training and mentoring over time. Second, they need to collect and report on a broader array of information, including on changing policies and practices that affect trade. Third, they need to be linked together with efficient means of communication so that information available in one country is immediately available in all countries of the region.

Donors have for some years been frustrated with the moribund status of many public market information systems. Indeed, some of these systems do little more than collect market prices and report them – too often late and inconsistently – in national newspapers.[24] In some cases (e.g., in Kenya and, very recently, Malawi), the tendency has been to bypass public systems in favor of private systems which are seen as potentially more dynamic and sustainable. Such initiatives are important and will undoubtedly generate important lessons for improving market information. Yet the basic public good nature of market information, especially in the underdeveloped market systems that prevail in the region, means that fully private systems will not be profitable for the foreseeable future. We suggest that a hybrid approach is needed. First, government needs to maintain and strengthen its commitment to collecting and disseminating basic market information. At the same time, these information services, or sister organizations linked to them, need to have the financial and managerial autonomy to generate revenue, seek additional outside funds (e.g., from donors), and manage these funds. The objective is to provide increasingly relevant information for the private trade, while at the same time providing policy makers with analysis and perspective that strengthens and refines government commitment to making markets work.

[24] Mozambique's SIMA is one exception. With long-term capacity building financed by USAID/Mozambique, it has grown into a locally managed and financed system with a strong record of publishing timely information year round for many years, building increasing links with the private sector and farmer associations, and going beyond prices to supply outlook, trade, and policy information. Even it, however, has suffered from serious cash flow problems in recent years. See Arlindo et al. (2004); Mabota et al. (2003); and SIMA (2004) for examples of recent output that go beyond basic market bulletins.

7. WHAT ROLE FOR STRATEGIC GRAIN RESERVES?

Strategic grain reserves (SGRs) have not been discussed in this paper for one reason; they played no role in what has to be considered a successful response to the 2002/03 crisis.[25] This fact raises the question of whether the international community and local governments can be expected to respond so adroitly to future crises and, if not, whether SGRs could be reasonably expected to improve the timeliness of emergency response, and at what cost. In principle, a small and well-managed stock could provide "degrees of freedom" in responding to crises, allowing quick sales or emergency distribution as needed until commercial imports and food aid can arrive. Yet the long management record of such facilities in Africa is not at all encouraging. A comprehensive review by NEPAD (2004) captures this record well:

... in Southern Africa, continued attempts to use strategic grain reserves to help stabilize cereal prices for both producers and consumers have undermined market incentives for private traders to perform normal arbitrage functions that could otherwise have satisfied governments' food security objectives in most years. As a consequence, small farmers have often been penalized for producing a surplus crop by falling prices and lack of market. This has led them to reduce plantings with subsequent adverse impact on the overall production and grain availability situation in following years. At the same time, consumers have also faced greater instability in grain markets, with respect to both physical quantities available and price. In most cases, therefore, experience with strategic grain reserves in this part of Africa up to now has been less than satisfactory. (NEPAD 2004, p. 34)

Seasonal price patterns for maize grain in southern Africa support NEPAD's contention that consumers often face *greater* instability in prices and availability due to the operation of food reserves. Mozambique, with no food reserve and no restrictions on maize trade, shows a typical seasonal price rise for maize grain at retail of about 50% in its deficit southern region (see Appendix A). Malawi on the other hand, which holds a frequently large reserve and intervenes in other ways in the market, shows the *highest* seasonal price movement, averaging 90% over the past decade. Seasonal price rises in Zambia, which makes intermittent attempts to influence the market, lies between these two countries, with a typical seasonal rise of 65%. Our earlier analysis showed how Malawi's management of food reserves, trade, and food aid led to skyrocketing prices in 2001/03, followed by depressed prices in 2002/03. Whiteside (2003) also documents this. Thus, Malawi's record reinforces existing concerns about the ability of publicly held food reserves in the region to improve food security, or even to avoid worsening it.

There also appears little reason to expect that production and stock shortfalls in the region will not be anticipated well ahead of the time. Early Warning really was early in 2002/03, and local governments, SADC, and donors need to make sure it remains that way.

Thus, it is not at all clear how a small stock would improve crisis response. SGRs are, however, back on the analytical agenda of the World Bank and other bilateral and multilateral donors, and

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[25] Malawi's sale of its reserve in 2001 has been blamed by some for leading to the 2001/02 crisis in that country, but even some critics acknowledge that it was at most one contributing factor (Devereux 2003).

many local governments have never lost their desire to maintain such a reserve. Any review of their anticipated costs and benefits needs to take carefully into account their past management history, realistic assessments of the prospects for improved management, and an in-depth understanding of the strengths and weaknesses – and direction of change – of local and regional early warning systems. Without conducting that analysis here, we suggest that government and donor time and money are likely to be better spent on continuing improvements to market information and early warning systems, on improved infrastructure for domestic food marketing, on more transparent policy toward external trade, and on market facilitating mechanisms that can be deployed when needed during crises.

8. WRAPPING UP

The response to the 2002/03 food crisis in southern Africa was a major success in terms of early warning and monitoring, collaboration among governments, the emergency response community, and donor agencies, institution building in national and local VACs, and the use of vulnerability assessment methods to guide food aid distribution. We are also impressed that a systematic assessment of the experience was conducted so soon after the ending of the immediate crisis, in April 2003.

Nonetheless, this review has suggested that the response relied too much on food aid, that markets played a larger role than anticipated, and that they could have played an even larger role if appropriate government policies and procedures had been in place. The review has suggested improvements in information and operational procedures that could further enhance the efficiency and effectiveness of emergency response in the region. We also suggest that local and donor country governments work with WFP and other relief agencies as needed to generate a final accounting of the amount of food aid that had actually reached intended beneficiaries by 31 March 2003, so that a more accurate estimate can be made of the degree to which food aid needs were overestimated. Such final accountings should be a regular part of any emergency response operation, so that lessons can be more fully learned before attention is diverted to the next "hot spot." In this sense, the assessment by Mano et al. in April 2003 may more profitably have been done a month or two later, when more final numbers on actual distributions would have been available. Finally, we have suggested that as SGRs once again appear on the policy agenda, their probable costs and benefits – especially the opportunity cost of policies and marketing infrastructures not improved because of the focus on an SGR – need to be very carefully assessed.

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Appendix A: Seasonal Indices for Retail Maize Grain prices in Mozambique, South Africa, Malawi, and Zambia (All Y axes on same scale to facilitate comparison)

Figure A1. Seasonal Price Indices for Maize Grain in Selected Markets of Southern Mozambique (1994-2004)

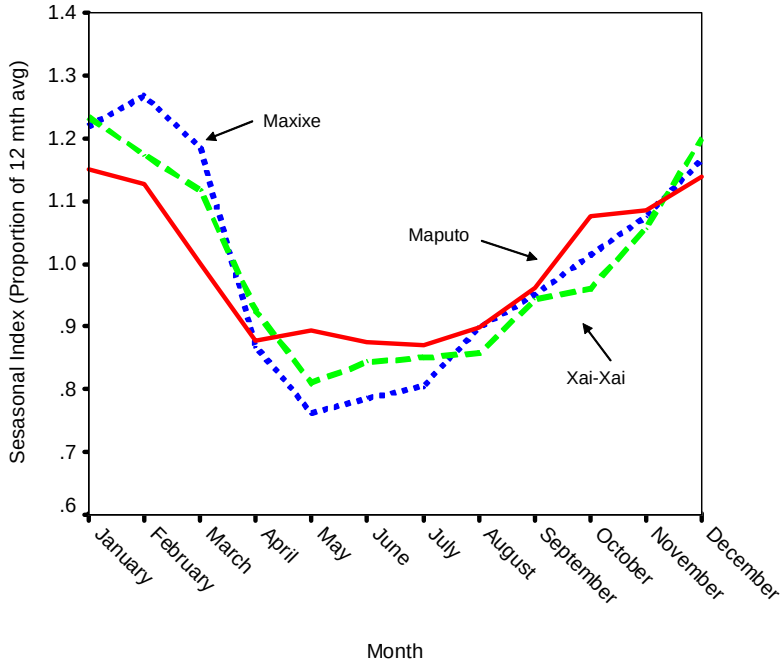


Figure A2. Seasonal Price Indices for Maize Grain in Southern Malawi (1994-2003)

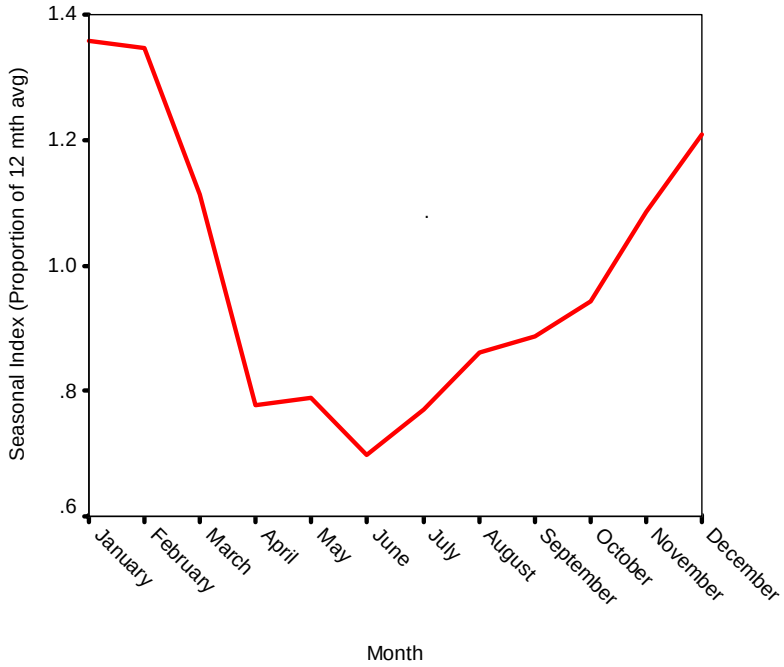


Figure A3. **Seasonal Indices of Maize Grain Prices in Selected Markets of Zambia (1994-2003)**

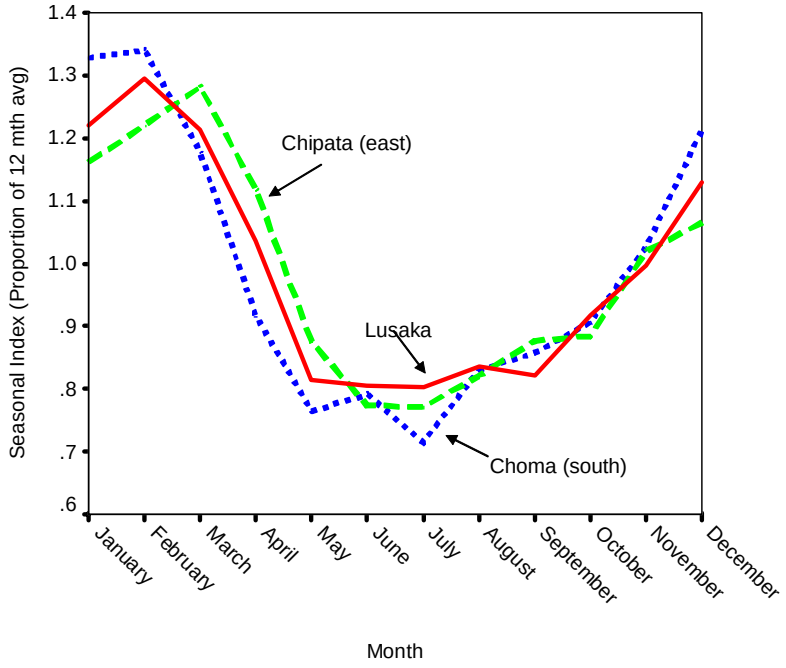
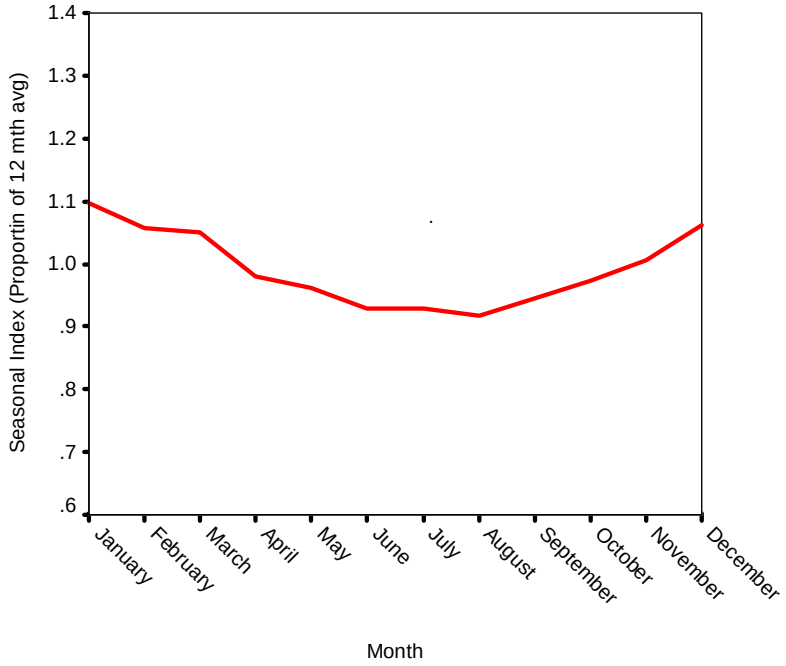


Figure A4. **Seasonal Indices for Maize Grain Prices in South Africa (Randfontein, 1996-2003)**



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