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MAKING THE TRANSITION TO A MARKET-BASED GRAIN
MARKETING SYSTEM

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Abstract

The paper considers how to bring about greater price stability in African food markets, particularly in landlocked countries of southern Africa, during single marketing seasons and between successive marketing years. It concludes that there exists a theoretical case for direct government intervention, and notes major political pressures, mainly of a short-term nature, in favour of such intervention; however, due to the interplay of logistical, political economy and managerial factors, the results of such intervention are likely to be unsatisfactory. Low-key approaches involving the adoption of simple a priori decision rules can mitigate but not eliminate the difficulties concerned. The paper reviews other approaches to price stabilisation, concluding that there is no immediate and complete solution, but that substantive progress can be achieved over time, by building local understanding of the issues, and bringing about improvements in policies, infrastructure and marketing institutions. A core institutional strategy is proposed involving radical improvements to crop forecasting, warehouse receipt and inventory credit systems of high efficiency and integrity and, a leading support role for the international food aid system. Warehouse receipt systems are moreover shown to have particular merit in facilitating wider reform.

Introduction

This paper was prepared following a workshop organised by the World Bank and the UK Department for International Development (DFID) on the management of the variability of food prices¹. The brief for the workshop was to address the topic on a worldwide basis, but in practice much of the discussion focused on price variability in landlocked countries of southern Africa, notably Malawi and Zambia,

where problems were seen as particularly intractable. The volatilityⁱⁱ of monthly average retail prices for maize in Malawi and Zambia for the period April 1996 to October 2004 was respectively 56.3% and 54.5%, compared to 32.8% for wholesale prices in the Republic of South Africa (Dana *et al.*, 2005).

Many African countries have swung from State control to relatively liberalised systems, and while this has often reduced the budgetary cost of supporting agriculture, prices have remained unstable and production has stagnated. This has led some parties to propose that African states should institute parastatal forms of market intervention for the purpose of managing price variability, developing commodity chains and ensuring credit repayment (Dorward *et al.*, 2005), in contrast to the facilitative “Washington Consensus” prescriptions of the past two decades. Studies suggesting that official price stabilisation has led to welfare gains in certain Asian countries (Timmer, 2000; Dawe, 2001, Dorward *et al.*, 2004) have lent some credence to this argument.

This paper addresses the question of how to bring about greater price stability, during single seasons (intra-seasonally) and between successive marketing years (inter-seasonally), in the grain markets of Africa, and particularly landlocked countries. The author approaches the debate partly as a researcher, and partly as a development practitioner who has instigated initiatives to address the problem as part of an effort to more generally enhance the efficiency of African grain markets (see Coulter and Onumah, 2002).

Some work, notably that of Newbery and Stiglitz (1981) suggests that food price stability is not a leading policy concern, but substantial arguments have been advanced to suggest otherwise, pointing to its impact on poor consumers, producers and the macro-economy, particularly in the context of imperfect credit and risk management markets (see Dawe, 2001). However, as Myers and Jayne (2004) state, it remains to be established whether, in the African context, the most cost-effective means to address these problems is through direct food price stabilization (by Government) or through institutional innovations and investments that attempt to address the incompleteness of the market structure.

Using both African and non-African examples, the paper considers the pros and cons of a range of options for improving the performance of grain markets, and making a successful transition towards a market-based food grain sector, and thereby contributing to price stabilisation. The options considered are as follows.

- Option 1 involves *traditional forms of government intervention* to stabilise prices, as well as *certain variations designed to improve performance*, including hiving off certain functions to private operators, a low-key form of intervention using simple operating rules, and “synthetic storage” involving international futures and options markets.
- Option 2 considers *using the local purchase of food aid grains as a tool for market development and price stabilisation*, taking advantage of the food aid donors’ major involvement in Africa.
- Option 3 considers whether *improvements in information on production and markets* can materially assist players to make better marketing and storage decisions, and thereby contribute to price stability
- Option 4 considers whether the same can be achieved by providing *incentives to selected private players*.
- Option 5 considers the scope for *developing storage at producer level*, so that farmers hold crop off the market for longer.
- Option 6 considers the potential role of *warehouse receipt systems*, as a means of facilitating storage and thereby contributing to intra-seasonal and inter-annual price stability.

Finally the paper pulls these findings together and proposes a strategic approach for reducing price variability and otherwise improving the performance of African food markets.

Past studies on agricultural food market reform have often recommended a list of activities which countries need to carry out. For example Kherallah *et al.* (2000) recommend to: fully implement reforms; find institutional solutions to failure of input credit markets; develop a legal infrastructure for market transactions; increase investment in infrastructure and institutions; promote effective governance and state capacity to monitor development; encourage smallholder production of export crops; address the problems of vulnerable groups in remote areas, and; institute credible, sustainable

macro-economic policies. While the recommendations are well grounded, few if any African countries are systematically pursuing such a comprehensive agenda. Governments may not give importance to all these measures, and are constrained in their capacity to tackle them; it is difficult to move forward simultaneously on so many fronts.

In view of this background, this paper seeks to identify “priority initiatives” that countries can implement to “break the logjam” and move forward in the process of food market reform. These should be measures that enjoy widespread support and which encourage local stakeholders to get involved and go on to implement further measures within a broad reform agenda. Significantly, the discussion of Option 6 suggests that the development of warehouse receipt systems may be such a priority initiative.

Option 1: Using public procurement and strategic reserves within a liberalised market framework

Why public procurement?

Within a liberalised market system, the main purpose of public procurement is to ensure farmers remunerative prices and an incentive framework which will allow them to progressively intensify production, and to provide reserves which can be used to meet food emergencies such as cannot be met through imports. Most transactions are expected to take place through the private market, but the State can intervene directly to assure that prices are kept within bounds that take account of the market requirements of surplus producers and the food security concerns of consumers, and may also constitute food security reserves to handle local food emergencies that cannot be met in a timely manner with imports. The need for public procurement has been particularly stressed in the case of land-locked countries, given the massive difference which often exists between import and export parity prices vis à vis the rest of the World. In the light of this Pinkney (1993) concluded that the elimination of state procurement in southern Africa (Malawi, Zimbabwe and Zambia) would lead to very large inter-annual price variations, with adverse dynamic consequences.

A range of practical problems

Notwithstanding the theoretical attractions, public procurement has a chequered history, frequently with adverse impact on public finance and resource allocation. Coulter and Poulton (2001) explored these issues, and the main problems are as follows:

- 1. Political pressure in favour of pan-territorial pricing.** Largely because grain crops have a low value to weight ratio, and are costly to freight, pan-territorial pricing has led to grossly inefficient resource allocation in countries as far apart as Tanzania (until the late 90s) and Brazil (from the 1960s to early 90s). From the point of view of an outsider it may seem logical to vary prices in relation to their transport costs from surplus producing locations to deficit markets, but in practice there are great political pressures to pay the same price regardless of location. This is particularly the case in Africa, where spatial price differentiation can be seen as setting one region, or ethnic group, against another.
- 2. A mismatch between logistical reality and political imperatives.** Transport costs between countries in southern and eastern Africa are very high; except with localised cross border trade, costs are normally in the range of \$20 and \$90 per tonne depending on which pair of countries is trading at any time. However, intra-regional trade is necessary for countries to clear markets, and the direction of this trade must sometimes change from one year to the next, depending upon whether a country (or a part of that country) is in surplus or deficit. Large inter-seasonal price swings are necessary if countries are to continue trading with each other, but this “commercial logic” cuts across a political logic that denies the legitimacy of variable prices – see Box 1 for the case of Zambia.

Hence, attempts to establish price ceilings inevitably create disincentives for intra-regional trade, the degree of disincentive depending on the level of the ceiling established. This happens regardless of whether Government consummates its intention to intervene in the market; by simply announcing its intention to intervene it will cause many private traders to stay out. In the absence

of private trade, one or two scenarios occur. Either Government fails to supply sufficient grain, and prices rise more than they would under a free market scenario, or Government and donors effectively subsidise prices and are consequentially drawn into a growing “vortex of intervention”, whereby they must continue subsidising producers and/or consumers to mitigate the effect of previous interventions. Both these scenarios can be observed in the recent history of Malawi and Zambia.

BOX 1: THE CASE OF ZAMBIA – LOGISTICAL REALITY VERSUS POLITICAL IMPERATIVES

In 2001, the Government of Zambia sought to prevent wholesale prices of maize rising above \$180 per tonne. However, at times of high world prices and regional shortage, such as in 2002, the country has needed to import at a cost reaching up to \$300 per tonne. It is possible to reduce these peaks through a combination of better crop forecasting, clearer agricultural and trade policies and more timely operations on international markets, but it is difficult to reduce them to levels deemed politically appropriate, unless by a very heavy system of public price stabilisation, which itself is likely to prove a disincentive to domestic private storage, due to “overhang”ⁱⁱⁱ and other implementation problems.

- 3. Difficulty in implementing within closed borders.** Countries may on the other hand wish to stay out of international trade and establish autarchic protection regimes. Not only does this result in inefficient resource allocation^{iv}, but it is practically unenforceable. If governments attempt to stabilise prices within sealed borders, they find their stabilisation efforts leaking into neighbouring countries. Moreover, high duty protection tends to foster under-declaration (of the kind that can be noted with some countries’ imports of cheap edible oils), while inconsistent protection policies facilitate round about trade through third countries, as noted in a study of the West African rice trade by Coste *et al.*, 1991.

- 4. Difficulty in implementing regional models.** Regional policy coordination offers a possible way out of this problem, allowing inter-governmental agencies to stabilise prices over entire regions. However there is a lack of examples where this has happened, and in the author's view it will very difficult to establish such regimes. Governments are very reluctant to relinquish sovereignty over matters to do with food security or the remuneration of farmers, and given the need to promote intra-regional trade, decision-making over prices will be politically fraught, particularly when it comes to: (a) establishing spatially differentiated prices (which will inevitably favour some countries over others), and; (b) having to change the price relationships to reflect shifts in the direction of trade, depending on the timing and state of harvests in different areas.
- 5. Weaknesses in the implementation of public procurement.** A range of operational problems adversely affect the performance of public procurement systems, notably the tendency for short-term agendas to over-ride strategic objectives, reluctance to delegate to professional managers, crowding out of the private sector and "overhang", and the "commitment treadmill". These points are further discussed in the following paragraphs:

Short-term agendas. These arise from a range of motives, including genuine concerns over food security, desire to placate the demands of producers in particular regions and outright rent-seeking activities. The most distressing case of the latter was Malawi's sale of its food reserve in 2001/02 (Devereux, 2002a). In some cases, it seems that more and less noble motives get mixed up, as for example, when a government concerned about a food shortage decides to give a preferred company exclusive right to import food duty free, while its competitors are obliged to pay the normal duties.

Lack of delegation, leading to slow and cumbersome decision-making. Due to the political implications of their work, it is particularly difficult for marketing boards and food reserve agencies to develop autonomous and professional management; major decisions on procurement, selling and financing tend to be taken by inter-ministerial committees rather than being delegated to managers. Pinkney (1993) proposed that marketing boards act flexibly in pricing and procurement policies, "leaning against the wind", but this requires an organisational culture where

talented managers are given discretion to make decisions and protected from adverse political “flak”. With the advent of multi-party politics, public interventions in the grain market become a matter of great electoral sensitivity providing an additional disincentive to delegation.

Crowding out and overhang. Crowding out is particularly evident in India and Pakistan:

Government intervention has guaranteed relatively stable prices to producers and consumers, but at an inordinate cost to the public purse, mainly because differences between public procurement and selling prices do not allow private parties to enjoy “normal profits” from inter-temporal and spatial arbitrage. African Governments generally have less extensive intervention systems, typically consisting of a statutory food reserve. Nonetheless Governments’ residual ability to intervene often creates an overhang effect; this refers to uncertainty about Government plans to intervene in the market which makes it risky for private parties seeking to store grain. Finding it difficult to predict how Governments, acting alone or in concert with food aid donors, will act, they decide to minimise their storage activity and trade on a hand-to-mouth basis.

Commitment treadmill’. This refers to a phenomenon whereby, once public intervention policies have been established, powerful political forces tend to perpetuate them, even where budgetary and environmental signals point to deleterious effects. An example of this is Tanzania, where it was the bankruptcy and closure of the marketing board (National Milling Company), rather than its reform, that led to the end of a pan-territorial pricing system which had been at the root of its financial woes. In Asia, the problem manifests itself in other ways. In 1991, public corporations in Pakistan procured 60% of the total wheat marketed (Coulter, 1991); World Bank *et al* (2005) reports that, despite the introduction of a system of seasonally-adjusted (“cascading”) prices, the percentage procured by public agencies in the main producing province (Punjab) was still 50-60%. In the period between these two reports, it was well known that similar price stability could have been attained at a fraction of the cost to the public purse, simply by increasing the difference between public sector procurement and issue prices, but the decision was not taken. On the other side of the border, in the Indian State of Punjab, pan-territorial price support, coupled with other forms of public subsidy are causing over-production of paddy rice and are causing a precipitous decline in the water table and deterioration in water quality (World Bank, 2003), and have almost

completely crowded out private marketers. Notwithstanding its role in facilitating the green revolution, India's public procurement system has become veritably onerous and is proving very difficult to reform^{vi}.

Possible variants on public procurement

There are some alternative ways in which Governments can develop their public procurement systems, notably by procuring through public tender instead of buying from all comers on an into-store basis, using private sector storage operators, using a single price floor while letting the international market buffer price peaks, and by making use of international futures and options markets. These are discussed in turn:

Procurement through public tender, or using private storage operators. Public tenders are sometimes used in procurement and recycling of grains by national food security reserves, e.g. in Mali and Zambia. In principle, tendering introduces greater transparency into the management of public reserves, and develops the capabilities of traders who must learn to deliver substantial volumes of grain against standard specifications. They are however less flexible, and give less opportunity to test the market, than simply setting specifications and buying at the store gate.

By contracting private warehouse operators to store for a fee, public sector agencies can economise both on warehouse construction and staffing costs. The warehouse operator takes care of all physical handling and is held responsible for delivering specified weight and grade of commodity. He will be free to handle both public and private stocks and in this way economise on the use of facilities; this is discussed further under Option 6, which deals with warehouse receipt systems.

Using a single price floor while letting the international market buffer price peaks. Implementation difficulties in public procurement may be reduced by establishing very simple decision rules that only occasionally need changing.

Consultants advising the Government of Malawi in 1999 proposed such an approach. They advised that all public procurement be phased out, except for a small food security reserve and a buyer-of-last-resort function at a few key storage facilities. Professional private sector warehouse operators would manage these facilities, and issue warehouse receipts to all wishing to deposit grains there for safe keeping. Government would procure by buying up the warehouse receipts offered at a single floor price – no more than \$100 per tonne – and if necessary, a consortium of donors would underwrite the price guarantee.

Government would not use this grain to defend a price ceiling, but immediately offer the warehouse receipts back to the public at purchase price plus carrying costs. Traders, including international traders who operate in the Republic of South Africa, would be free to buy the receipts on a first-come-first-served basis. Apart from that, the consultants recommended that the market be left completely free for the trade to operate within and beyond the country's borders. At times of grain shortage, prices would be buffered by imports from South Africa and elsewhere; Government would assist the most vulnerable groups with voucher or other types of access schemes, but steer clear of intervening in the grain market, so as to avoid creating overhang.

While implementing such a system, it would be vital to ensure reasonably accurate crop estimates, since these would provide private players with the necessary signals to make their procurement plans and move stocks into Malawi well in advance of lean season shortages.

The system was potentially attractive for two reasons. The into-store price could be set at a level high enough to allow farmers in most of the country to break even, even allowing for transport and handling from farms, but low enough to avoid it being invoked very frequently. Between 1996 and 1999, wholesale grain prices had been closer to import parity than export parity, and usually far in excess of \$100 per tonne. The recommendations were not implemented, however. Had they been implemented they are likely to have mitigated the hardship which occurred in the food emergency of early 2002, by encouraging domestic production in the years leading up to it^{vii}, and encouraging the import trade to put a cap on consumer prices when it occurred^{viii}.

Notwithstanding the attractions of this approach, it is not without possible snags. In many cases (an extreme case is that of India quoted above - World Bank, 2003), political pressures cause minimum prices to be ratcheted up to the point where they crowd out private storage and become unsustainable. Moreover in the event of a series of bumper harvests, policy-makers might be faced with the unpalatable decision of lowering the minimum price. Steps may also have been needed to ensure access to maize supplies in certain locations with severe logistical difficulties.

Making use of international futures and options markets. Dana *et al.* (2005) show how Governments of Malawi and Zambia can make use of “synthetic storage”, by hedging on the South African Futures Exchange (SAFEX). The proposed strategy involves buying March futures contracts, with a view to lifting them in the lean season, and if needed, using them to relieve shortages at that time. Significantly they advise against the alternative of buying call options, on the grounds that SAFEX futures are much more liquid than exchange options, and more cost effective than either exchange or over-the-counter options.

With simulations using prices from 1997 to 2004, they show hedging to be advantageous vis à vis the alternative of an unhedged approach which relies on a combination of imports and domestically-procured inventory, mostly due to a reduction in inter-annual variability in food security costs. They moreover find that it is possible to obtain a reduction of about 35% to 40% in these costs by hedging on a discretionary basis without sacrifice in cost variability. Hedging is seen as a strategy to be pursued in combination with more traditional forms of public price stabilisation, i.e. holding local inventories and importing on spot markets.

While it is feasible for Governments to operate on the futures market, they may encounter similar problems to those enumerated in the discussion of traditional forms of intervention. While Dana *et al.*'s simulations show overall benefits during an eight-year period, the purchase of futures will be a gamble in any given year. In such circumstances, officials may be reluctant to accept the responsibility of operating in this market, fearing that they may be blamed for losses. At the same time, Governments may be slow to delegate to decision-makers the necessary discretion and budgetary facilities. In this regard, the purchase of call options would prove more operationally feasible, since Government's

maximum exposure would be limited to the up-front premium, and options would only need to be exercised when they are profitable and self-liquidating.

These considerations suggest that it may be best for the Governments of Zambia and Malawi to encourage private players – whose corporate culture is attuned to risk-taking – to make use of SAFEX’s trading facilities, so that these contribute to the overall price stabilisation process. They can do this by a combination of: (a) improving the reliability of crop forecasting services, so that private players can plan for an emerging food deficit; (b) reassuring them that Government will leave imports to the private sector, and; (c) ensuring a convertible currency which will allow them to pay margin calls.

Conclusions re public procurement

In some land-locked countries of Africa, there is a theoretical justification for governments to intervene to stabilise prices inter-annually and there are major political pressures, mainly of a short-term nature, in favour of such intervention. However, due to the logistical, political economy and managerial factors outlined above, such remedies are likely to do more harm than the maladies they seek to address. By adopting low-key approaches involving the adoption of simple a priori decision rules, it is possible to reduce but not eliminate these difficulties.

Governments may also wish to hold small food security reserves, to tide them over in the event of food emergencies, but as with interventions to stabilise prices, they should take steps to minimise the “overhang” which discourages private trade and storage. This will involve keeping the reserves as small as possible in accordance with their purpose, instituting simple and transparent a priori decision rules for the procurement and recycling of stocks, and providing clear assurances (preferably backed by law) of their commitment to avoid interventions that make private imports and stockpiling uncompetitive.

Governments may alternatively consider South Africa’s example after liberalisation in the mid-90s of *not* holding a food security reserve; they can respond to food emergencies by buying private stocks and

importing from the world market. Indeed, in the case of South Africa, the absence of a food security reserve to date has encouraged private storage since there has, in effect, been no “overhang”.

Option 2: using the local procurement of food aid grains as a tool for market development

Over the last decade the World Food Programme (WFP) and donor countries – notably the EU and member states – have increasingly funded the procurement of local food surpluses in African countries, with a view to their distribution in the same countries or region. Significantly, the largest food aid donor (USA) and some other countries mostly source food from the home country, as public policies constrain their ability to support local purchase schemes. Nevertheless, food aid donors now constitute the largest market outlet for food grains in several countries, exceeding the quantities purchased by commercial millers. In Uganda, the WFP annually procures over 60,000 tonnes of maize and about 15,000 tonnes of beans, while in Ethiopia, annual food purchases are often in excess of 200,000 tonnes.

Overall, local purchase has proved highly beneficial to these countries, improving the livelihood of farmers in surplus-producing areas, and has contributed to the emergence of more sophisticated local traders capable of delivering substantial quantities according to standard specifications. However, studies by Gray *et al.* (2004) in Ethiopia, and Wandschneider and Hodges (2005) in Uganda, show that the food aid agencies’ massive purchasing power could be put to much better use, contributing to domestic price stability, were they more engaged in promoting improvements in domestic grain markets. The scale of operation of the food aid agencies give them a singular opportunity to influence for the better the institutions and performance of these markets.

Uganda regularly runs a grain surplus, which it must either sell to the WFP or export to other countries in the region, notably Kenya. However, WFP’s procurement activities do not take sufficient account of the country’s need to develop its commercial markets, on which it will be dependent once the food aid business subsides. Improvements are needed in the timing and geographical distribution of purchases, in the specifications which WFP uses (they are currently out of line with East African requirements), and in procurement systems. WFP selects traders by open tender, and the selected traders use their

contract with WFP as collateral to obtain financing. Most of the traders specialise in the food aid business, and are not generally engaged in selling grain to the domestic wholesale trade; this is hardly surprising because the contractual system ties the trader to WFP and provides no encouragement to develop wider markets. Because of the weak linkages with wider markets, these traders are moreover slow to pass on their knowledge of improved grading and handling practices.

Procurement could be greatly improved if it were carried out in conjunction with an effective warehouse receipt (WR) system; WR systems are further discussed later in this paper (Measure 6). The existence of the WR system would encourage traders to raise finance to procure grains in advance of the opening of tenders. The stocks would be graded to a standard which meets the requirements of all potential markets, and if the trader lost the tender, he could offload the stock to the wholesale market, a local mill or a buyer in a neighbouring country.

In Ethiopia, traders supplying the food aid business are similarly specialised, and isolated from the regular wholesale trade, which does not use uniform grading standards. Since 1996, Ethiopia domestic oversupply has twice led to severe collapses in local grain prices, and this can be partly attributed to the large amount of food aid grains in the country, as much as 30% of which beneficiaries sell back onto the market as a means of satisfying their non-food requirements. In 2001, prices of maize and wheat fell below cost of production, frustrating Ethiopian efforts to intensify production. The problem could be greatly mitigated through better management of food aid, above all by a change in US policies towards the same. The USA is by far the largest contributor of food aid, typically supplying upwards of 300,000 tonnes per year, but it could be of greater assistance to Ethiopia if at times of local surplus, it were willing to provide cash aid in lieu of American food^{ix}.

There is also scope for timing the procurement of locally purchased food aid grain to assist in the management of open-market prices. Within Ethiopia, food grain stocks are currently channelled through the Ethiopian Food Security Reserve Agency (EFSRA), on whose technical committee both Government and donors are represented. EFSRA acts as a food-aid pipeline, providing grain to Government and non-governmental organisations (NGOs) on the basis of donor commitments.

While the idea of using EFSRA for price stabilisation purposes is potentially attractive, it is necessary to acknowledge a possible difficulty. EFSRA has distinguished itself as a highly efficient organisation, and some parties attribute this to the simplicity of its mandate (to stock donated grain, and lend stocks against donors' pledges) and decision-rules. If EFSRA takes on a price stabilisation role, decision-making will become more complex and subject to political pressures, and the agency will be more exposed to the operational difficulties outlined earlier in this paper.

In this section we have seen that the international food aid system can greatly increase its contribution to the development of private marketing systems in many countries, and to price stabilisation. This should involve firstly:

- all donor countries supporting local purchase, or alternatively, providing cash aid which beneficiaries can use to purchase locally available food
- providing WFP and similar bodies with a strong mandate (on a similar footing to their food aid mandate) to support the development of local marketing systems in African countries, and
- providing these bodies with the necessary resources and capacity to engage in the development of local marketing systems.

Option 3: Provision of information

Two types of public information are typically proffered as a means of improving the performance of markets: crop forecasts and market information, the latter consisting most often of information on domestic and international prices.

It is important to have accurate periodic estimates of the current crop, during the growing season and at harvest time, particularly in land-locked countries where prices can move in radically different directions depending on whether there is a surplus or deficit. Such information is especially valuable to larger players wishing to take positions in the market and engage in inter-temporal arbitrage, and helps them manage their price risks. Much has been invested in early warning and crop forecasting systems, but their value has been greatly diminished by the poor quality of forecasts, which moreover are

sometimes untimely, coming out too late to be of use to interested players. In Zambia, these problems have on occasions contributed to major trading companies making poor trading decisions and experiencing substantial losses.

The poor quality of information results from both methodological weaknesses and “spin”. With regard to the latter, Government departments wishing to emphasise their achievements or make a case for Government intervention to support prices, may on occasions increase their forecasts; if they are fearful of a food shortage, and want to appeal for aid, they may bias the forecasts downwards. One of factors contributing to Malawi’s food emergency in 2002 was an inaccurate estimate for root crop production in Malawi, which Devereux (2002b) attributes to very biased information.

The UN system sometimes compounds local forecasting errors; in 2001, WFP/FAO forecast that Zambia would have a deficit of over 600,000 tonnes, i.e. about 60% of annual consumption, and greater than the Government’s own estimate of around 400,000 tonnes. Both these figures contrast with the Zambian National Farmers’ Union (ZNFU) forecast 200,000 tonnes, widely regarded to have been the most accurate.

Notwithstanding exceptions, the record with market information services (MIS) is so far not very encouraging. A study by Shepherd (1997), drawing on a survey of 53 functioning MIS, found that the majority were performing poorly, due to under funding and lack of a commercial approach. Frequently set up by donors, many MIS had been over-designed and have attempted to cover too many crops and markets. The quality of information collected was poor and its value to market participants reduced by delays in dissemination. Galtier and Egg (1998) expanded on many of Shepherd’s criticisms but went on to question the relevance of price-based MISs, and argued for a range of interventions to overcome specific information-related problems.

By and large African Governments have not treated MIS as a high priority, and private players have not been vocal in expressing demand for such services. The strongest systems, e.g. FoodNet in East Africa, usually benefit from long-term donor funding. If services are to be valued by users, it is necessary to provide accurate and timely information rather than breadth of coverage, and to transmit

the information through simple and accessible means, such as the internet, rural radio and mobile phones.

Option 4: incentives for selected private players

Joffe and Jones (2003) review a number of incentive schemes designed to stimulate activity and investment among private players in the marketing chain, including:

- various types of competitive challenge funds and matching grants schemes
- the promotion of farmer groups and cooperative structures by American NGOs, the International Fund for Agricultural Development (IFAD) and others, and
- input credit schemes, like the CARE-Agent and CNFA ([US] Citizens Network for Foreign Affairs) schemes in Zimbabwe

Apart from this one may also mention schemes to bring about low cost innovations in transport, e.g. in Uganda, and loan guarantee schemes promoted by the US Agency for International Development (USAID) and others.

Challenge funds, matching grants and loan guarantee schemes are all designed to stimulate investment by reducing the associated costs and risks. However, they may prove rather blunt instruments in dealing with the specific problems of food systems. Firstly, as Joffe and Jones highlight with regard to the DFID *Business Linkage Challenge Fund*, they tend to focus on highly profitable niche activities, rather than on agricultural products that the poor consume. Secondly, while they can facilitate particular investments within the food system, e.g. a lack of crop stores or mills, they do not address systemic weaknesses, e.g. lack of effective demand for grain or cash with which to procure grain. Here the authors point to the problem that “response from private operators tends to be weak, or of poor quality in a context where markets are weak, fragmented and generally constrained”.

Such schemes can also crowd out private investment. With regard to competitive grant schemes, the same authors note that the scheme “has to tread a thin line between supporting ‘winners’ with clear

commercial potential, and wasting funds on privately bankable projects. Rigorous eligibility criteria and assessment procedures are therefore very important, as is competent fund management with clear objectives and procedures”.

The CARE-Agent and CNFA schemes have played a valuable role in developing input supply systems in Zimbabwe, but the reader should note that such programmes are not commodity-specific, and uptake tends to gravitate towards whichever commodities farmers find most profitable. Farmers form group enterprises with a view to linking up with markets and suppliers of inputs and services they need to require to produce particular products and enhance productivity. However hitherto, they have tended to focus upon higher value cash crops, notably tobacco, cotton, coffee, sesame, sunflower, paprika, vanilla; often the groups are linked to a commercial player willing to provide the necessary inputs and financing.

These arguments do not entirely rule out the case for special incentives and subsidies to particular players in food marketing systems. However, such schemes should be predicated upon a strong understanding of the sub-sector, and only undertaken in support of “core measures” which address the primary constraints upon the operation of market.

A particularly promising BDS approach can be described as “commodity chain development”. In this case the promoter, which may be a special project or NGO, systematically analyses the food commodity chain from seed to final consumer, including support services such as finance and quality control, and seeks to identify key constraints and opportunities affecting its development. Based on this analysis, and working with local stakeholders, the promoter provides technical assistance, finance or even grants to assist specific players invest in the sector and overcome bottlenecks. In practice I see such projects focusing on higher value products, as in the case of the COMMARK Project with wool in Southern Africa or TechnoServe’s successful support for cashew processing in Mozambique, but there is also scope for application to food chains. Commodity chain development can focus attention on the critical constraints in the food marketing system, and also assist grass-roots farmer organisations to link up with service suppliers.

Option 5: developing storage at producer level

Another complementary approach is to help farmers improve rural storage, with or without the provision of credit secured by the stored commodity (“inventory credit”). Poor storage not only causes small farmers to lose crops to pests, but to sell them early to avoid further loss; the pattern of early sale drives intra-seasonal price instability.

Since the 1970s, the international community has devoted significant resources to supporting group or collective village initiatives but overall results have often been poor. “Cereal banks” were widely promoted in drought-prone areas of Sahelian countries, but performed poorly in terms of long-term sustainability (Berg and Kent, 1991, and Reusse, 2002). The Rockefeller Foundation has reported good initial results from a market-oriented cereal bank project it has recently been supporting in Western Kenya (Mukhwana, 2005), but it will require more time to assess whether success can be sustained in the long term. The attempt to promote cooperative marketing through Tanzania’s Rural Structures Programme was singularly unsuccessful; during the 80s and early 90s 1,000-odd village stores of around 300 tonne capacity were built, but the level of practical utilisation was very low (Coulter and Golob, 1992).

Possibly the most successful initiative in this area is the ‘Village Community Granaries’ (GCV) scheme in Madagascar, which involves farmers who produce rice and other agricultural commodities on small plots, mainly for home consumption. The scheme started in the early 90s, and by 2003 involved 27,000 small farmers holding 80,000 tonnes of paddy in stores with capacity ranging from 5 to 120 tonnes each. Fraslin (2005) claims that it has provided major benefits to the farmers, equivalent to a 50% increase in paddy yield, as well as contributing to the stabilisation of prices regionally.

This was achieved by a large network of village-based credit unions (the ‘Caisses d’Epargne et de Crédit Agricole Mutuels, or CECAM), which have enjoyed the assistance of an NGO, various French agricultural unions, European cooperative bankers (Rabobank and Crédit Agricole Mutuel) and several donors. According to Fraslin (2003), a key to this achievement was the members’ subscription of substantial equity capital, which at once committed them to the endeavour, and helped in obtaining soft

loan funding from the public treasury. The network expected to break even by 2006. The CECAMs provide members with inventory credit along with seasonal production credit, leasing and other credit products, and there is also a more modest savings facility. Together with its regional federation (URECAM), they also provide a complete supervisory structure for ensuring correct storage protocols and the integrity of the inventory credit system.

This experience shows that it is possible to organise sound village-based inventory credit systems on the back of a very strong movement of credit unions or rural banks, particularly one which can access low cost lines of public sector credit. However, it will be much more difficult to do this in the majority of African countries which lack such robust movements and Governments prepared to bank-roll them. This problem is illustrated by the experience of village cooperatives promoted by the NGO, TechnoServe, in Ghana. From the end of the 80s, the NGO TechnoServe promoted a scheme whereby farmers organised into village cooperatives could obtain inventory credit from banks against the stocks (Coulter and Shepherd, 1995). Small farmers gained greatly through this operation, and loan repayment ranged between 95% and 100%. However, the volumes cooperatives handled were limited – never more than 1,100 tonnes in a single year for all of them – and they continued to rely upon the NGO to provide overall supervision of storage operations, to monitor cooperative records and activities and act as the bank's unpaid agent and ensure loan repayment (Kwadjo, 2000). Consequently, the system did not reach a scale at which it could cover all the related costs and provide comfort to the banks without the mediation of the NGO. Neither did it enjoy the backing of a federative framework like CECAMs in Madagascar which could take care of regulatory and support functions.

The Ghanaian scheme was also adversely affected by commercial banks' weak representation in rural areas, and limited interest in agriculture, at a time when easier returns could be obtained by investing in Treasury Bills. Wampfler (2002) mentions the weakness of domestic financial sector as an obstacle to the development of a promising village inventory credit scheme in Niger.

While past experience cautions against high expectations of cooperative storage initiatives, the widespread and often successful adoption of group marketing activities, noted in the previous section, suggests that farmer cooperation can play other useful roles within the commodity chain. Stringfellow

et al. (1997) found that successful group enterprises were more likely to be involved in coordinating marketing or procurement activities, rather than more complex activities involving the operation of operating jointly owned assets, and in obtaining credit against group guarantees. This observation allows one to explain why viable group enterprises often work effectively under contract with agribusinesses that provide credit, inputs and markets. It also suggests that group storage may prove viable in conjunction with warehouse receipt systems of the kind described below under Option 6. In this case the group deposits its crop with an accredited third-party warehouse operator who can guarantee the physical integrity of the stock, and thereby facilitate the group's access to inventory credit. Indeed this advantage is already evident with the Tanzanian warehouse receipts system for coffee which started in 1998; it allows primary societies to deliver their coffee directly to the national auction instead of having to sell through their regional cooperative union.

There have been some particularly successful initiatives, and on a substantial scale, involving improved systems of individual family storage, using galvanised iron silos, in Central America and Swaziland. In these cases families have not only improved their own nutritional status and income, but have contributed materially to price stabilisation on a national level. In Central America farmers not only stabilise prices intra-seasonally, but also inter-seasonally; part of the grain they stored was a precautionary reserve held in case the next crop turned out to be poor (Coulter et al., 1995). While this is a hopeful avenue, the development of family storage needs to be approached in a systematic manner, as a form of social marketing. In practice, storage initiatives are sometimes 'tacked on' to larger agricultural projects, and consequently do not receive the sustained attention and follow-up they need^x.

Option 6: warehouse receipt (WR) systems

What are WR systems?

A WR system involves warehouse operators issuing documents of title for grain deposited by farmers and the public in general. The depositors can then use the documents to sell grain, pledge it to banks, and/or withdraw it. WR systems may be of a regulated kind, and the regulator often plays a crucial role in building up confidence in the system, and hence demand for warehouse receipts, among

farmers, traders and bankers. The regulator's job is typically to license warehouses to receive deposits, and to ensure the integrity of the system over the long term. The grain is normally graded according to standard parameters of moisture content, foreign matter etc., by warehouse staff who have been trained and certify as competent to sample, weigh and grade. The regulator may be responsible for overseeing these aspects, or another agency may carry out this function.

The security offered by the licensed warehouse operator, and the system of standard grades, facilitate distance trade on a "sight unseen" basis, and more ready access to finance for storage. These factors explain why effective WR systems typically attract a multiplicity of players wishing to hold stocks for speculative and other reasons, including farmers, local traders, millers, international traders, Government intervention agencies and food aid donors. Most players will be seeking to engage in intra-seasonal storage, and some will only wish to hold warehouse receipts briefly before selling them on. As the system develops, and assuming that the policy environment is reasonably benign, some players will see the advantage of engaging in inter-seasonal storage, notably international traders with access to low cost-funding^{xi}. The existence of the WR system greatly reduces such companies' up-front costs (making flights to the country concerned, hiring personnel, contracting collateral managers etc.), and it allows them to take a position by simply buying up warehouse receipts.

A WR system is not a "cure" for problems of price volatility which, as was noted in the discussion of Option 1, is necessary for the clearing of markets. It is however a tool by which countries can, with supportive public policy and better infrastructure, greatly mitigate such volatility, bringing levels closer to those in the Republic of South Africa.

Achievements to date in Sub-Saharan Africa

WR systems may be broadly classified as either *regulated* or *unregulated*. Unregulated systems are known to have existed since the time of the Babylonian Empire, but in the grain markets of contemporary Sub-Saharan Africa the main examples are:

- (a) a strong and successful system which has emerged spontaneously in the grain sector of the Republic of South Africa following the closing down of the Maize and Wheat Boards in the mid 1990s^{xii}
- (b) the operations of international “collateral management companies”, normally subsidiaries of inspection companies with European headquarters

Both of these have made important economic contributions, but there are limitations to their applicability to grain systems in Africa north of the Limpopo. The South African system rests on a high degree of trust in established warehouse operators, mainly cooperatives and trading companies in their own right, which simply does not exist elsewhere in the Region. This lack of trust has provided an opportunity for the international collateral managers, but these companies’ high costs and non-trading status limit them to the most profitable niches, mainly with cash crops and large millers. Moreover, they normally deal with clients on a one-to-one basis, and do not set up “public warehouses”, i.e. warehouses open to deposits by the public at large.

Work by Coulter and Norvell (1998) led to a conclusion that, in order to make WR systems widely accessible in Africa, it would be necessary to establish regulatory frameworks of high integrity, and enjoying a high level of trust, and for this reason it would be best to make them directly accountable to players with a direct stake in their success, notably bankers.

Recent experience in Zambia suggests that this approach is beginning to pay off. A group of local stakeholders, including farmers, traders, food processors, bankers, insurers and Government have got together to form the Zambia Agricultural Commodity Agency Ltd. (ZACA), to regulate the activity for the storage of maize and other grain crops. ZACA is a “one-stop shop” which certifies warehouse operators, the warehouses, and the competence of warehouse staff, as well as setting and enforcing grading standards. Donors are funding ZACA on a tapering basis during its start-up period, but regular funding comes from user fees it charges certified warehouse operators. The Ministry of Agriculture has submitted to Parliament legislation that will recognise warehouse receipts as documents of title and authorise the delegation of regulatory authority to ZACA. The initiative was carried out with the support of a project managed by the UK Natural Resources Institute (NRI), and funded by the Common

Fund for Commodities (CFC), with co-funding from the Dutch Government, USAID, Shemp Project (IFAD) and DFID.

Table 1 shows the results of this initiative so far. In the second year of operation, the volume of maize deposited in certified warehouses was over 65,000 tonnes which is on track for ZACA's target to be self-sustaining, without donor support within 4-5 years from start. As one would expect, commercial farmers constitute the bulk of the early adopters of these services, but small-scale peasant farmers are already coming on board, and deposited 5,800 tonnes in the second season.

The Zambian achievement is particularly significant, for two reasons. Firstly it occurred in a country noted for large-scale public sector interventions, of a somewhat ad hoc nature (Jayne, 2005), and this environment was particularly challenging for the introduction of warehouse receipts. Secondly, the WR system took off before the country had passed a law making warehouse receipts *negotiable documents of title*. There is considerable uncertainty over the rights of transferees to take delivery of goods for which they have been given the warehouse receipts, and this leads to banks carrying out checks to establish that every receipt is unencumbered, delaying lending decisions and requiring additional borrowers to put up additional collateral. Far from being negotiable documents, they are positively illiquid. Once the new legislation is passed, it should be possible for banks to start lending on the basis of the commodity itself, with less regard to the borrower's background or credit history, and within a few years the receipts should become as liquid as South African silo certificates.

Advantages of WR systems

Regulated WR systems are a simple concept, and intuitively attractive to a range of players in the public and private sector and civil society. Tactically speaking, they offer *a single entry point for addressing multiple constraints in the marketing system*. By easing access to finance, and at lower costs, they encourage more storage and contribute to price stability. Apart from this they can be expected a range of other impacts, which one would expect to have knock-on effects on price stability; they will:

- Require the use of standardised grades, which facilitates trading by description and reduces the cost of doing business
- Provide safeguards against cheating on weights and measures (this can be a subject of appeal)
- Shorten the commodity chain linking farmers to end-users
- Reduce storage losses arising from pests and bio-deterioration
- Reduce the cost of managing public food reserves and locally procured food aid grains. Both Governments and food aid entities can procure and manage stocks in the form of warehouse receipts with a small staff, without having to invest substantially in warehouses themselves.
- Create incentives for private players to build new warehouses. If the warehouse licensing criteria are strictly applied, they will serve as a seal of approval which makes it more viable to raise funding for investment in warehouses and ensure demand from customers seeking to store.
- Facilitate proactive cooperation among farmers in marketing their goods, as discussed above under Option 5.
- Ease access to rural finance, making it easier for farmers to intensify production and increase productivity – see Coulter and Onumah, 2002. The WR system can also be used to finance input supply chains making it easier for dealers to place them at the disposition of farmers.
- Facilitate the development of market information systems. The establishment of WR systems will make it easier to establish MIS, as it will bring forth a new clientele of producers, traders, millers and bankers who need information upon which to base their marketing and financing decisions and manage their risks.
- Facilitate the development of new trading and financing instruments. For example, commodity exchanges can start trading in warehouse receipts, with minimal “performance risk”, i.e. the licensed warehouse operator guarantees the physical availability of stock.
- Provide a channel for stakeholders to dialogue with Government about broader policy issues, notably where these affect the agricultural marketing system.

Another tactical advantage of the WR system is that it can provide *compelling reasons for a range of stakeholders to participate* (see Figure 1). If the system is efficient and trusted, it tends to attract a variety of players with different motives and generates its own dynamic. It should be noted that the

system is additionally advantageous to bankers, because it allows them to offset adverse risk weighting under the Basel II accords (see Moors, 2003, Chapter 19).

It is due to the two advantages, of (a) tackling multiple constraints and (b) providing compelling reasons for stakeholders to participate, that WR systems fulfil the requirement of a “priority initiative”, referred to in the introduction to this paper, capable of “breaking the policy logjam” in the process of food market reform.

Limitations and preconditions for success

Regulated WR systems are not appropriate at all places and at all times, given that there are certain pre-conditions for successful implementation:

- ***Private sector leadership, and substantial volumes of agricultural products which can be stored and receipted.*** The successful start in Zambia is mainly due to there being several hundred commercial farmers, large scale millers, and banks anxious to lend to both these parties; these have created a low-cost service of which smallholders are now taking advantage. Many countries, lacking such a range of players, will by contrast, struggle to find the critical mass of commodities needed to establish a WR system. However there are ways in which countries can move forward without a strong commercial farming sector. For example in Uganda, other important stakeholders are capable of taking the lead, notably Uganda Grain Traders Ltd., Stanbic Bank and the WFP. In Kenya one might also expect millers to play a key role, and a leading warehousing company (Lesiolo Grain Traders) has already established a system for farmers in its zone of operation. In other countries, the best approach may be to regionalise the warehouse licensing service, with established regulatory bodies licensing and inspecting warehouses in neighbouring countries.
- ***A minimally supportive policy environment.*** The Zambian experience shows that it is possible to establish WR systems in countries where the policy and legal environment is less than optimal, but there needs nonetheless to be a certain degree of policy coherence. The experience of Ghana in the 1990s shows how unplanned and ad hoc policy shifts can undermine budding inventory credit

systems (Coulter and Onumah, 2002). In Zambia, it is to be hoped that Zambia will not import excessively in years of shortage, or otherwise take actions which cause losses to players who have stored with the WR system. Besides this, some Governments are unfavourable to the idea of the private sector taking a leading role, and in such cases it is likely to prove difficult to create viable WR systems.

Scope for creating a regulatory system of high integrity and trusted by banks and other stakeholders.

If there are serious doubts on this account, it is best not to set up a regulated WR system. In any event, the concept should be rolled out gradually, with a lot of learning by doing. It is important that key stakeholders, and particularly private banks, take a very direct interest in the health of the regulatory bodies. For this purpose it may be appropriate for regulatory bodies to evolve into commodity exchanges or some sort of for-profit multi-stakeholder entity, but in a way which does not compromise their broader developmental aims. In the related inventory credit scheme in Madagascar, discussed under Option 5, a regional federation of credit unions appears to have set up an effective system of self-regulation for loans to its members.

Public procurement and warehouse receipt systems can be mutually supportive, but this is not always the case. On the positive side, public procurement can spur the development of WR systems, because investors see that they can build warehouses where they may store both public and private stocks, which may be commingled by grade with a view to maximising store utilisation. The public body also gains because it can buy up the private stocks simply by purchasing warehouse receipts for readily identifiable stocks. However, as noted above, the overhang of public stocks can create disincentives for private storage, and there are some circumstances where public procurement can undermine the integrity of WR systems. In Brazil private grain warehouses were mainly concerned with handling public stocks, and the warehousing activity itself was the object of political connections, as a result of which the regulatory authority was unable to enforce the high standards needed to ensure trust. This problem debilitated the Brazilian warehousing system over several decades (Coulter *et al.*, 1998). This observation reinforces the recommendation under the last bullet point. Indeed, those seeking to create regulated WR systems should try to *make the service accountable to stakeholders* (notably

private players who will lose personally if they fail), and always *prioritise the quality of services over short-term development impact*.

The way forward

The first step in any strategy is a widespread recognition, both within Africa and the international community, that managing food price risks poses a major challenge, due to the interplay of factors discussed under Option 1 (notably the mismatch between logistical reality and political imperatives, and the problem of “overhang”), and there is no simple solution. On the one hand, for reasons discussed under Option 1, state intervention into the market is prone to exacerbate the problem. On the other hand, it is difficult for the private sector to perform effectively, since few Governments are providing a fully supportive policy and institutional environment.

Concerned parties should therefore adopt a patient approach, recognising the potential danger of rushed or disbursement-driven initiatives. Resources should however be devoted to developing understanding of the policy and practical issues among policy makers, civil society and resident donor officials, so as to equip these to act best under the circumstances.

As regards specific measures, it is recommended that countries develop their agricultural marketing systems mainly by addressing the incompleteness of the market structure, focusing on the three I’s of Incentives, Infrastructure and Institutions. With regard to incentives they should try to establish stable macroeconomic, financial, trade and marketing policies which encourage regional and international trade to cover production shortfalls, and investment in the sub-sector. With regard to infrastructure, the emphasis should be on reducing the cost of transport and improving telecommunications. The building of warehouses, on the other hand, should be treated as primarily a private sector function, to be encouraged through the operation of WR systems. With regard to the institutional aspects with which this paper is mainly concerned, the following core strategy is suggested, to be implemented by individual countries, with the support of the international community:

- a) improving crop forecasting services, which provide really accurate information on food surpluses and deficits, and in good time (this will minimise false alarms and help both private players and Governments interact more effectively with the market);
- b) developing regulated WR systems, of high efficiency and integrity;
- c) giving the international food aid system a strong mandate to support the development of local marketing systems – this will involve donor countries agreeing to fund local purchase (or providing cash assistance in lieu), and food aid agencies using their local procurement muscle to promote improvements in local grain marketing institutions, including WR systems;
- d) developing market information systems (MIS), taking particular account of the needs of participants in the WR system in their design, and;
- e) encouraging small farmer enterprises in surplus-producing areas to interact with, and take advantage of, the WR system (allowing them to develop a credit-history with the banks and move on to productivity-enhancing improvements)
- f) helping farmers improve household crop storage and, where prospects for sustainability are particularly good, establishing microfinance-linked inventory credit systems (see Option 5)

In addition to this there is scope for “commodity chain development” projects, addressing specific constraints and opportunities in the food system.

The development of the WR system is key to the strategy, and closely related to most other components. In terms of phasing, it is best if a small number of countries, where the policy environment and other circumstances are most propitious, can pilot the system. Other countries can take advantage of these experiences to develop their own improved versions. Indeed it is through such a process of emulation that impacts are likely to snowball, leading to knock-on effects on productivity and price stability, and a gradual transformation of African agriculture.

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FIGURE 1: COMPELLING REASONS FOR STAKEHOLDERS TO PARTICIPATE IN THE WR SYSTEM

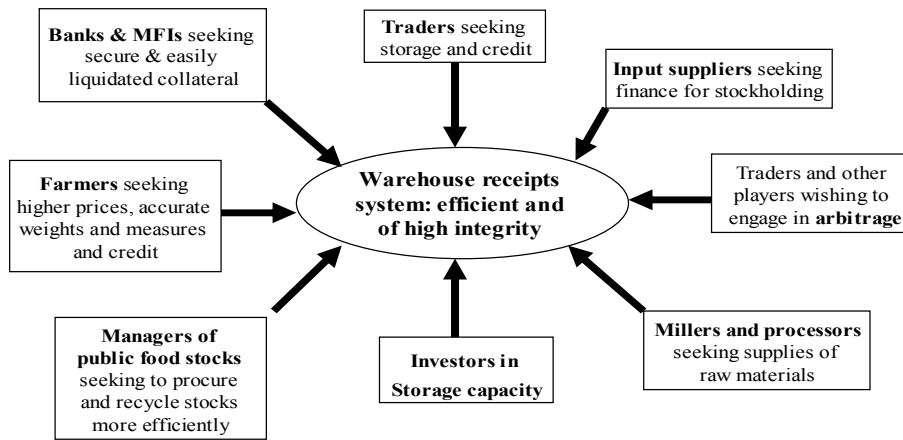


TABLE 1: ZAMBIA'S REGULATED WAREHOUSE RECEIPT SYSTEM PROGRESS TO DATE		
	2003/04	2004/05
Number of certified warehouse operators	1	4
Number of banks involved	1	4 ¹
Volume of maize deposited in certified warehouses	6,600 tonnes	65,468 tonnes
Volume of maize financed against warehouse receipts	5,000 tonnes	24,954 tonnes ²
Volume of maize deposited by smallholders	0 tonnes	5,800 tonnes
¹ Barclays, Stanbic, Intermarket Discount House and Standard Chartered ² the total stocks financed were much larger than shown here. The certified warehouse operator, AFGRI, stored 34,900 tonnes for farmers and financed them directly, without use of warehouse receipts.		

ⁱ Price Risk Management Workshop, organised by the World Bank and DFID, Washington D.C., 28 February and 1 March, 2005.

ⁱⁱ Volatilities are standard deviations of the log differences in price on an annualized basis.

ⁱⁱⁱ The term overhang refers to public uncertainty about Government plans to sell stocks, or procure grain for local sale, making it risky for private parties who seek to store.

^{iv} Consider for example the effects of suppressing trade between northern Mozambique and Malawi, or between the southern Highlands of Tanzania with Zambia.

^v The concept of the “commitment treadmill” was put forward by Brian Wright (*pers. comm.*) at the Food Price Risk Management Workshop.

^{vi} In January 1, 2003, Government of India stocks were 48.2 million tonnes, almost three times the current buffer stock norm of 16.8 million tonnes, and 50% more than average annual procurement of 32.2 million tonnes between 1998 and 2001.

^{vii} According to data from FEWSNET, the dollar per tonne equivalent of average monthly retail prices were often in the range \$50 and \$80 in heartland maize producing areas of Malawi between June 2000 and May 2001. These prices are very low by international standards, particularly in a landlocked country which is more often in deficit than surplus, and well below official estimates of cost of production.

^{viii} In some areas of Malawi, retail prices were in excess of Kw 40 per kg (about \$550 per tonne) in Feb 2002, which is close to double import parity levels based on imports of white maize from South Africa. Devereux (2002) who provides this data, attributes high rural prices to “urban bias”, including higher purchasing power in urban areas, the Food Reserve Agency’s imposition of a pan-territorial price ceiling of MK 17 per kg (about \$240 per tonne) on its imported maize, and logistical difficulties.

^{ix} Another problem occasioned by these external supplies of food aid is that they accustom Ethiopians to consuming more wheat (a grain in which Ethiopia is not an efficient producer and has difficulty meeting domestic demand), as opposed to maize and sorghum (grains which it can produce in considerable surplus). Large areas of northern and Eastern Ethiopia are structurally dependent on food assistance for the foreseeable future, but the country’s overall dependency could be lessened if the dependent population were supplied cereals of a type that the country can produce in surplus.

^x This conclusion comes from a review of storage initiatives covering Swaziland, Mozambique and Tanzania, and funded by Swiss Development Cooperation (Coulter and Schneider, 2004).

^{xi} Questions have been raised as to whether the WR system would be used for inter-seasonal storage. At least one of the leading international trading companies has engaged in storing maize inter-seasonally in Tanzania, Zambia and Malawi, notwithstanding the unfavourable policy environments for this kind of activity, and without the facilities of a regulated WR system. Such activity is much more common in a mature market system such as exists in the Republic of South Africa, though there is great year-on-year variation in stocks carried over. According to Chris Sturgess of SAFEX (*pers. comm.*) “some years carry-over stocks are down to a few thousand tonnes, and then like this year over 3 million tonnes”. According to the South African Grain Information Service (SAGIS), average opening stocks at the end of the season (May) were 2,163,000 tonnes between 2001 and 2004, which is about three times average monthly deliveries by farmers to the commercial sector from 2001/02 to 2004/05.

^{xii} Some silo sites are registered by the Johannesburg Stock Exchange as delivery locations for SAFEX futures contracts, and must comply with certain criteria, but there is no system to regulate the performance of all grain silo operators