What is known about the impact of emergency and stabilization reserves on resilient food systems?

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Abbreviations

APTERR	ASEAN Plus Three Emergency Rice Reserve
ASEAN	Association of Southeast Asian Nations
CERF	Central Emergency Response Fund
CFS	Committee on World Food Security
ECOWAS	Economic Community Of West African States
EFSRA	Ethiopia's Emergency Food Security Reserve Administration
FAO	Food and Agriculture Organization
FRA	Food Reserve Agency
GDP	Gross Domestic Product
HLPE	High Level Panel of Experts on Food Security and Nutrition (of the CFS)
IRA	Immediate Response Account
NCPB	National Cereals and Produce Board
NEPAD	New Economic Program for African Development
ODI	Overseas Development Institute
P4P	Purchase for Progress
RTUF	Ready To Use Food
SAARC	South Asian Association for Regional Cooperation
SADC	Southern African Development Community
SRG	Strategic Grain Reserve
WFP	World Food Programme

Executive summary

This paper assesses and summarizes the evidence on the contribution of emergency and stabilization reserves to resilient food systems.

Three main purposes of food reserves are distinguished: (a) Emergency reserves to supply food distributions; (b) Stabilization reserves to prevent excessive price fluctuations; and (c) Social safety net stocks to provide working stocks for recurrent food distributions. However, in practice one agency is often tasked with addressing multiple objectives.

Other distinctions can be drawn on the composition of reserves (grain reserves, food reserves, physical reserves or virtual reserves); and reserves at different administrative levels (local, national, regional or international). These three variables – primary purpose, composition and administrative level – are used as a framework for analysis of impact. A large number of permutations are possible – even before the specificities of the local context are taken into account – indicating the complex scope of the analysis.

For each of the three main types of reserve the paper examines (a) conceptually how the reserves may contribute to food security; (b) evidence on the operations and outcomes; (c) evidence on the food security consequences; and (d) considers the comparative effectiveness of alternative policy instruments.

The purpose of **an emergency reserve** is to improve the timeliness of emergency food aid transfers to meet urgent needs following a disaster. The reserve can avoid delays associated with either the approval of extra-budgetary expenditure or procurement and delivery delays. In practice the effectiveness of emergency reserves is determined by the quality of management.

In principle there are two major arguments in favour of emergency reserves. Firstly, they are relatively cheap to operate as stock sizes are fixed and relatively modest. Secondly, a well designed emergency reserve does not distort market prices. Based on this there is a general consensus in the policy literature on the value of small emergency reserves at national level.

However, a more critical examination is required. Firstly, if the major risk is slow onset disasters, such as a drought, it may be feasible and cheaper to mobilize food from other (private) sources rather than maintaining an expensive stock of food for rapid response. Secondly, the use of emergency food reserves reinforces an outdated food aid approach to humanitarian assistance. Cash transfers may be more appropriate and timely. If not cash, then other non-food based livelihood interventions may be the key to timely responses which prevent the collapse of livelihoods. Food transfers are inherently a late and blunt instrument. Thirdly, if the objective is nutritional, then adapted and high-nutrition value may be required, not what is often a subsidiary function of a grain stabilization reserve.

In the wake of the 2008 price crisis there has been an active debate on establishing both regional and international emergency reserves, to complement national emergency reserves. The potential for risk pooling suggests an opportunity for cost savings in holding regional reserves. However, no regional reserves are currently operational. The challenge of establishing arrangements for governance and releases has proved to be a largely insurmountable obstacle.

Recent arguments have been made for establishing a global emergency reserve under the control of WFP. The principal justification relates to enhancing the capacity of WFP to respond to major new shocks at short notice. The optimal mix of instruments – or added value of a new one – does not appear to have been rigorously analyzed. Factors to consider include the extent to which the bottleneck is really one of access to resources or the ability to deliver. A range of alternative emergency financing facilities exist, alongside pipeline management tools.

Stabilization reserves are designed to intervene in markets, and influence food supplies and prices. These interventions may target consumers and producers, with objectives of boosting food production or improving food access. Food reserves are one possible instrument for price stabilization.

The evidence of the impact on prices is somewhat inconsistent. Some case studies pointed to success in reducing aggregate price volatility over time. However, as reserves often work in tandem with “beggar my neighbour” trade restrictions, so domestic price stabilization is only achieved at the cost of greater price instability for trading partners. A general finding is that downward prices tend to be modulated better than price spikes. Poor governance, often cited in sub-Saharan Africa – further undermines performance.

In some cases reserves may *increase* price volatility. A lack of transparency and predictability in Government intervention in markets, through reserve operations, creates disincentives for private trade and deters imports even at import parity.

Evidence indicates that stabilization reserves tend to increase average producer prices – and in many cases consumer prices too. As the majority of the food insecure - including small-scale farmers - are net food purchasers, this is a regressive food security policy. The majority of the benefits of higher producer prices are consistently captured by the more affluent farmers. A policy of national food self-sufficiency implemented through reserve backed price support, forces poor consumers to pay high prices for food and increases the degree of poverty in a country.

From an economic efficiency perspective, targeted transfers are preferable to open market interventions. However, arguments continue for using general market interventions. The first is that orthodox targeted food transfers are frequently ineffective in maintaining food security and controlling malnutrition. The second it that governments can justify insulating domestic prices from transitory spikes on efficiency and equity grounds – assuming these events can be distinguished from normal market behaviour.

Reserves have become a major drain on fiscal resources. The World Bank in particular argues that the scale of these operational costs has major opportunity costs, and argues for re-orientating investment to increasing agricultural production and the resilience of agricultural production to shocks.

There is strong evidence that low aggregate stocks are associated with high price volatility. This finding leads naturally to a consideration of whether expanded *public stocks* would serve to calm markets, and mitigate future price spikes. There is a continuing debate between those advocating that the best route to price stabilization lies in further liberalization of trade, and those who perceive occasional but major market failures warrant maintaining the capacity of Governments to intervene.

Opinion remains clearly divided on the merits of establishing a global stabilization reserve. It is unlikely that empirical evidence will be able to conclusively resolve these debates. Given the huge costs and uncertain benefits it is perhaps unsurprising that concrete progress has not followed on these proposals.

A third use of reserves is as a stock for implementing regular food distributions. This includes backstopping regular food distributions through social safety net programmes. The operation of a food based social safety net is clearly not dependent on the existence of a food reserve. However, if a decision has been taken to put in place a food based social safety net then linking this to a food reserve offers a useful mechanism for stock rotation and decreasing operational costs of grain reserves.

The conclusions and evidence on the role and effectiveness of food reserves are reorganized along the dimensions of food availability, access and utilization. Using this analytical framework across the suite of studies allows the synthesis paper to integrate conclusions on the relevance and effectiveness of food reserves alongside other social protection instruments.

Ultimately, the appropriateness of a food reserve will depend on a wide range of *context specific factors*. This includes the food security situation, the interplay with other policies and instruments, the objectives of the reserve and availability of resources. However, a number of over-arching conclusions can be drawn out of the analysis.

<u>(1) Evidence to support use of stabilization reserves is weak ... but political arguments are strong</u>

Governments have resisted advice to cut costs and reduce stocks. The main driver of this is a failure of the international markets. The political costs of unpreparedness or inaction are too high to bear for states where food still represents a major share of household budgets.

<u>(2) There is broad support for emergency reserves at national level</u>

There is widespread *support for a small emergency reserve* to ensure that food aid is readily available in a crisis. However, the necessity of an emergency reserve is still a context specific decision - dependent on the local food security and a comparison with alternative food assistance instruments.

<u>(3) Added value and feasibility of new regional and global food reserves is questionable</u>

Recent attention has focused on establishing reserves at regional and global level, based on arguments of enhanced preparedness and efficiencies from risk sharing. Coordination challenges and trust issues across

national borders have complicated implementation and historical experience has been rather negative - suggesting a cautious approach is appropriate to their establishment.

(4) Situate the role of a reserve in a wider policy context

Public grain stocks need to be incorporated into a coherent longer-term strategy that combines the use of trade, investments in agricultural productivity, and well-managed, targeted safety net programmes. Ultimately, reserves can play a limited but important complementary role in improving food security.

(5) Good governance is critical for success

A pre-condition for effective reserves operations is good governance and strong management. One general observation from the literature is that confounding emergency and stabilization objectives in one agency leads to contradictory goals and undermines performance. Guidelines advocated for effective reserves include: independence from political process; professional management; and rules to ensure transparency in market interventions.

1 Introduction

1.1 Social protection and resilient food systems

This paper is part of broader review process that assesses and summarizes the current thinking and practice on the contribution of key social protection instruments to resilient food systems. Specifically this paper analyzes the role of food reserves. The other papers explore cash transfers, public works programmes, insurance, structured demand and integrated livelihoods programmes. There is also a synthesis paper which lays out an analytical framework, draws out patterns in the effects of the different instruments and explores issues that emerge across the papers as a whole.

1.2 A typology of emergency and stabilization reserves

A starting point for the analysis is clarifying the different types and purposes of food reserves. The meaning of "reserve" and related terms is often far from clear. Terms like "national food reserves", "strategic reserves", "emergency food reserves", "buffer stocks", "humanitarian stocks" and "intervention stocks" are used without clear definition, and often interchangeably. Frequently the same word is used for very different concepts.

A primary distinction can be drawn between a number of different design purposes for food reserves. FA0 has defined national food reserves as simply "stocks held or controlled by governments on a long-term basis for certain future contingencies"'. Three major objectives are commonly cited for holding reserves, and this paper distinguishes between them using the following terminology:

(a) A reserve with emergency relief as its primary aim often relies on a static stock depleted only during transitory food shortages or, temporarily, to allow stock turnover. Stock operations are not intended to influence (domestic) market prices. In this report these stocks are referred to as ***emergency reserves.***

(b) In price stabilization schemes the reserve is an operational buffer stock. A government agency aims to buy the commodity when prices are low to build up stocks, and sells when prices are high. These stocks are used to influence domestic prices to benefit producers and/or consumers. These stocks are referred to here as ***stabilization stocks.***

(c) Thirdly reserves provide working stocks for regular food distribution programmes. This function has grown in prominence with increasing attention to using social safety nets to address poverty and chronic food insecurity. In the paper these are referred to as ***social safety net stocks.***

(d) In practice one reserve agency is often tasked with multiple responsibilities. Multiple purpose stocks are referred to here as ***strategic reserves****.*

It is important to note that reserves span a number of separate purposes and imply very different modes of operation and criteria for assessment of impact. *Therefore the analysis of reserves is presented as a discussion of three principles types of instrument*s.

Other related reasons have been advanced for holding stocks, such a supporting the development of, or substituting for the absence of, efficient private sector market chains. But as minor objectives - with little evidence on impacts - these are not examined further in this paper.

A second important classification variable is the c*omposition of reserves.* Different commodities may be stored within a reserve. Most reserves tend to be grain reserves – principally maize, wheat or rice. However, these grains are not perfect substitutes and a disaggregated analysis down to the level of individual commodities may be relevant. As Timmer points out (2010) the markets for maize, wheat and rice have very different characteristics and this has important implications for reserve policy and operations.

A distinction is also made between *grain* reserves, and *food* reserves which include a larger set of commodities which may include processed foods.

More recently the concept of the reserve has expanded from a *physical reserve* to encompass the use of *virtual reserves.* Reserves may hold different proportions of physical stock and financial funds that can be used to purchase food if domestic supplies fall short of consumption needs. A more sophisticated variant is to use futures markets to ensure that adequate food supplies can be sourced promptly when needed, through hedging arrangements (Dana et al., 2005). The purchase of call options allows an importing government to put an (approximate) ceiling on the price it will pay for imported grain.

A third distinction is made between *reserves constituted and managed at the community, national, regional or international levels*. This is an important variable in the discussion, which affects the analysis of purpose, costs and benefits.

These three variables: primary purpose, composition, and administrative level of management provide a framework for the analysis of impact. As can be appreciated this already introduces a large number of possible permutations – even before the specificities of the local context are taken into account. Consequently, the analysis and presentation of the food security impacts of food reserves is complicated.

While the discussion in this paper is principally on publicly held stocks, the interaction between private and public stocks needs carefully consideration through the analysis.

1.3 The evidence base

The evidence on impact has been drawn from three main sources:

- Firstly, there have been a number of more policy orientated publications in relation to the operation of reserves. There has been considerable renewed interest in the wake of the 2008 global price crisis. This work is partly grounded in economic theory and econometric models (as opposed to data), and partly based on considerations of political economy.

- Secondly, given the long history in the use of public reserves, there is a relatively rich literature providing case studies of reserve operations. This principally refers to national reserves in sub-Saharan Africa (including Ethiopia, Kenya, Malawi, Mali, Zambia, and Zimbabwe) and Asia (India, Bangladesh, Pakistan, Indonesia, Philippines). This is supplemented by case studies on regional and international reserves.

- Thirdly, there are a number of studies that have attempted a quantitative analysis of the impact of (stabilization) reserves. A small number of meta-analyses have consolidated parts of this evidence base.

For clarity of analysis the paper examines each of the three main types of reserve separately. In practice these functions are often integrated in the mandate and operations of one organization – which complicates the analysis. However, it is useful to attempt to disentangle the evidence against the underlying objectives.

Under each type of reserve the paper examines (a) conceptually how the reserves may contribute to food security; (b) examines evidence on the operations and outcomes; and (c) examines evidence on the food security consequences.

This analysis includes a comparative assessment of the effectiveness of reserves with alternative policy instruments. Reserves are only one potential instrument to address each of the defined policy objectives. Therefore, in reality the judgement on the effectiveness of reserves has to be made as an alternative or complement to other available instruments in the context.

2 Emergency reserves

2.1 The purpose of an emergency reserve

The main objective of an emergency reserve is to improve the timeliness of emergency food aid transfers to meet urgent needs following a disaster. The reserve provides a ready stock of commodities than can be drawn down immediately for distribution to affected communities.

Emergency reserves essentially address two potential sources of delay in establishing food aid programmes:

- The first is a delay associated with the availability of funds to respond to an emergency. Responding to an unforeseen emergency may require an ad hoc budget allocation which can take time to approve. An emergency reserve serves as a store of value which can be readily called on.
- The second potential source of delay arises from the actual procurement process itself. Even if funds are available, organizing the purchase and delivery of food takes time. Internationally imported food aid can entail typical delivery delays of up to three months (Barrett and Maxwell, 2005).

Depending on the context, emergency reserves may consist of both physical and financial reserves.

2.2 Evidence on performance

There is a significant amount of reporting on the performance of national emergency reserves available in the literature. In general emergency reserves attract positive assessment for two core reasons:

- Firstly, they are relatively cheap to operate. The size of reserve needed for this purpose is relatively modest. Stock levels are typically set at levels to meet short-term needs, prior to supplementary resources becoming available from purchase or donation. For example Ethiopia's Emergency Food Security Reserve Administration (EFSRA) had a target level of only 180,000MT through the 1990's[1] – this is designed to feed 3.7 million people for 4 months.

- Secondly, at least in theory, emergency reserves do not influence market prices. As discussed further below, many economic analyses focus on potential market distortions and disincentive effects of reserve operations. Assuming food aid is well targeted to beneficiaries who would otherwise lack *effective demand* (i.e. they would be unable to buy food), this type of intervention will increase food consumption and improve food security, without displacing normal market transactions (Barrett 2002).

For these reasons the overall weight of *the policy literature* supports the establishment and use of small emergency reserves at national level (HLPE 2011, CFS 2012, World Bank 2012).

However, these arguments are essentially questions of doing no harm. There has been little critical examination of whether the assumptions used to justify the establishment of emergency reserves are valid. Are emergency reserves necessary to bridge until other resources come on stream? Or in the absence of reserves is there a substantial delay in mobilizing food resources for emergency transfers - or do other mechanisms fill this gap?

In the case of slow onset disasters, where there is good analysis of an impending crisis, it can be argued that there should be adequate time to mobilize resources and establish a food pipeline from alternative sources. It has been pointed out that drought induced emergencies in particular are about the slowest developing crises imaginable, often being the cumulative effect of successive failed seasons. Where countries are well connected to regional or international sources of supply, the rationale for carrying significant emergency stocks may be lessened. The NEPAD report (2004) argued that "*The option of holding no reserve could be appropriate for some countries, particularly coastal countries with easy access to international grain markets and countries with low variability in domestic production*".

[1] The current target has crept up to 407,000Mt as the objectives of the reserve have diversified.

An analysis from food security crises where emergency reserves were absent or ineffective argues this function is not always necessary. Writing on the southern Africa crisis in 2004 Tschirley commented that "*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*" (Tschirley et al 2004)[2].

Case study evidence on operations of functioning reserves is mixed. One of the best known examples of an emergency reserve is Ethiopia's Emergency Food Security Reserve Administration (EFSRA). The EFSRA works independently of a price stabilization objective and is not engaged in buying and selling of grain. Instead it provides grain loans to recognized relief agencies (including government and UN agencies, and NGOs) to support emergency response activities, with a guarantee that they will replenish the stock within an agreed-upon time period. Operational costs are effectively limited to storage costs, as replenishment is handled by the partner agency that borrows from the reserve, and are estimated at $35 per MT (Rashid and Lemma, 2011).

EFSRA is judged to be well managed and has proved to be a reliable source of food aid on an annual basis. A study by Rashid and Lemma concluded that "*EFSRA has played important roles in managing the aftermath of a sequence of droughts and emergencies. EFSRA was the only immediate source of food supplies in the 1999–2000 and 2002–2003 drought years, and both government and relief agencies heavily relied on the reserves to combat the unusually sharp increase in food prices during 2008–2009"* (Rashid and Lemma, ibid). The EFSRA example illustrates the relevance of the concept.

Emergency reserves are not always so effective. A well documented 'failure' is the case of the Malawi Strategic Grain Reserve (SGR) in 2002. In this case the National Food Reserve Agency disposed of its stocks in commercial operations immediately prior to the 2002 famine and was unable to intervene as the crisis intensified, nor prevent subsequent loss of life (Devereux 2002). The lesson here was that effectiveness is dependent on good governance and management - rather than an inherent flaw in the policy instrument. But one general observation from the literature is that this challenge often becomes acute when emergency and stabilization objectives are confounded in one agency.

2.3 Impact of emergency reserves on food security

The analysis of emergency reserves typically stops at the point of demonstrating the effectiveness of emergency reserves in facilitating food aid transfers. There is little critical examination of the outcomes or ultimate impact on food security. This requires asking a number of more probing questions and enters into downstream issues of the effectiveness of interventions supported by the reserve.
It can be argued that the use of emergency food reserves reinforces a rather outdated approach to food assistance. It is implicitly linked to a food aid response. The analysis of the role for an emergency reserve often appears insulated from global moves towards *food assistance,* in response to the limitations of food aid.

- Firstly, there is a growing body of evidence supporting the preferential use of cash transfers over in-kind food assistance (Harvey and Bailey, 2011). The use of cash transfers are reviewed elsewhere in this series. It is noted here that the broad consensus is moving towards an agreement that cash transfers typically offer efficiency and effectiveness gains in situations where *markets (continue to) operate, and without excessive price inflation*. Experience indicates that these criteria have been met in many national level food emergencies. If cash transfers are the preferred form of intervention then establishing reserves of cash, not food, are a logical conclusion.

- Secondly, the retrospective analyses of several recent crises – such as the Horn of Africa in 2006 - agreed that there were indeed problems with an untimely and slow response. However, what was really needed was early support for interventions to prevent the erosion of livelihoods (Maunder 2009). The fungibility of cash transfers bridge this divide to some extent, but the need for tailored and diverse livelihood interventions are seen as a priority. For example, in a pastoral setting livestock off-take programmes, vaccination campaigns or water and fodder provision may be the best response. Food transfers are inherently a late and blunt instrument.

[2] However, this does not include the case of Malawi (Devereux ibid).

- Thirdly, there is renewed attention to nutritional impacts. If the objective of emergency support is improving nutrition status then in-kind food transfers may be justified. However, the rations need to be carefully designed to achieve a nutritional outcome. The evidence suggests that grain alone – the dominant resource available from most food reserves - may have limited impact on nutrition status. An emergency objective may call for a broader set of food commodities, including energy rich Ready To Use Foods (RTUFs). This implies a very different type of emergency reserve from the current reality of a subsidiary function to a grain stabilization reserve.

2.4 Multi country emergency reserves

In the wake of the 2008 price crisis there has been an active debate on establishing both regional and international emergency reserves, to complement national emergency reserves.

Regional emergency reserves

Regional reserves usually fall under the jurisdiction of a competent regional inter-governmental authority, and are based on the coordinated operation of a number of national reserves. In theory a regional reserve offers significant efficiency gains. Risk pooling at the regional level, especially where the main shocks are not covariant (for example localized floods as opposed to region-wide drought), would in theory mean that a smaller total reserve stock is adequate, resulting in cost savings.

Several attempts have been made to establish reserves at the regional level. Efforts are on-going in both the Association of Southeast Asian Nations (ASEAN)[3] and Economic Community Of West African States (ECOWAS)[4] groupings to institute new reserves.

Reaching agreement on the principle of a reserve can be frustratingly slow. The South Asian Association for Regional Cooperation (SAARC) Food Security Reserve was established in principle in 1987 with provision for each member to draw on the food grain reserves in an emergency. Steps to create an operational SAARC Regional Food Bank began in 2004. Although the document was scheduled to be ratified by July 2007, only four countries had ratified the document by July 2008 and the SAARC Regional Food Bank was still not in place at the end of 2008. The Southern African Development Community (SADC) has made repeated political commitments to establishing a regional emergency reserve, most recently in 2008 (Viatte 2009). However, no concrete progress has ensued.

Even in Asia, where national reserves are judged to have been generally more effective, challenges in reaching agreement on governance and releases has proved a critical constraint. For example, in nearly 15 years of operation the precursor to the ASEAN Plus Three Emergency Rice Reserve (APTERR) only succeeded in making one emergency release due to poorly defined release procedures requiring time consuming inter-governmental negotiations (Timmer 2011). Currently no regional emergency reserves are operational.

Consequently a 2004 study for NEPAD recommended against establishing regional reserves given the poor record of governance of national reserves and the added layer of bureaucracy inherent in a regional reserve. It was concluded that the comparative advantages for action on food security at regional level lay elsewhere (NEPAD ibid).

A proposed global emergency reserve

Recent arguments have been made for establishing a global emergency reserve, specifically under the control of WFP. The justification relates to enhancing the capacity of WFP to respond to major new shocks at short notice, such as the 2008 food, fuel and financial crisis[5]. It is argued that a global emergency reserve is necessary to allow WFP to respond quickly and flexibly to major new crises.

[3] The ASEAN Plus Three Emergency Rice Reserve (APTERR) rice reserve is being established by the ASEAN states in conjunction with Japan, China and Korea.

[4] The preparation of the ECOWAS proposal for a regional reserve – under the acronym PREPARE – is progressing with technical support from WFP.

[5] Upward price spikes have the same effect as a budget cut for WFP. The excessive and unexpected price volatility in 2008 crippled the capacity of WFP to respond, while simultaneously increasing caseloads. Consequently in March 2008, WFP released an extraordinary appeal to bridge a US$500 million shortfall in budget http://documents.wfp.org/stellent/groups/public/documents/newsroom/wfp174162.pdf

This policy has received some political backing from a number of sources (HLPE 2011, CFS 2012). However, closer consideration of the arguments and evidence is warranted.

A systematic analysis might throw light on the extent to which the main challenge in 2008 was in reality one of the untimely availability of resources. It could be argued that major instruments – including those funded by the EU and World Bank – were in fact relatively timely. There does not seem to be the evidence to support an argument that the principal problem lay with the short-term flow of donor resources.

An alternative hypothesis suggests a rather different set of constraints. The 2008 crisis impacted on many new beneficiary groups and areas, meaning that the response was not simply a question of scaling-up on-going interventions, but the tricky problem of establishing new programmes, at scale, often in unfamiliar urban contexts. Retrospective studies of the 2008 crisis have not looked closely at the extent to which the real problem was not resources - but issues of programme design and implementation.

The size of reserve to mitigate against this type of global eventuality would also need to be substantial, with significant recurrent operating costs. This would have similarities with the WFP International Emergency Reserve, which is now largely defunct. In practice, donors were unwilling to make large advance commitments of commodities for unrestricted use (Clay 2003). A relatively modest cash account – the Immediate Response Account (IRA) – currently serves the purpose of bridging immediate needs for smaller emergencies and kick-starting programmes.

There are a whole range of alternative instruments established to facilitate rapid emergency food assistance responses by both UN agencies and Governments. Where cash can suffice, there are rapid financing facilities available from the Bretton Woods institutions (World Bank 2005). The Food Assistance Convention protects minimum food aid (or assistance) flows[6] and new pooled funds facilitate rapid humanitarian response (such as the Central Emergency Response Fund). Other non storage options exist for managing assured and cost effective food pipelines, such as WFP's Forward Purchasing Facility. Neither the optimal mix of instruments – or added value of a new one – appear to have been rigorously analyzed in the literature.

2.5 Summary

The food reserve literature – written largely from an economic perspective – draws largely positive conclusions on the role of small emergency reserves in ensuring that supplies of food aid are readily available in a crisis. However, a broad endorsement at policy-level deserves a much closer examination of relevance in each specific context.

The development of such reserves requires careful thought. Cash reserves to support cash transfers may be a more appealing option, with both efficiency and effectiveness gains over a physical food reserve. Equally where food transfers are needed to address a nutritional crisis, then the requirement may be for nutritious and diverse foodstuffs rather than the default option of rotating grain reserve stocks.

The successful operation of emergency reserves may be compromised by poor design and management at national level. This is a serious constraint, which appears to aggregate up to be a critical impediment to the effective operation of regional emergency reserves.

[6] Although unlike the previous Food Aid Convention, under the new Food Assistance Convention the predictability of emergency food aid has diminished as commitments can be changed on an annual basis.

3 Stabilization reserves

3.1 Objectives of market stabilization

Stabilization reserves are designed to intervene in markets, and influence supplies and prices. Specific reserve policies may be oriented to one or more of the following goals:

- Controlling price rises in exceptional years to protect consumers.
- Maintaining floor prices to protect producer incomes in case of exceptional commodity price falls.
- Maintaining pan territorial prices to avoid 'penalizing' consumers and/or producers in remote areas.
- Smoothing regular seasonal price cycles.

It is important to note that a price stabilization policy does not depend on a stabilization reserve. A mix of policy instruments can be used such as manipulation of the quantity marketed, controlling production and/or imports; or a decreed fixed price which is legally enforced. However, in practice reserves are often a preferred option. Many developing countries use policies of partial interference with the market, including reserve backed buying of the commodity when price tends to fall, and selling it when prices rise.

In addition to immediate objectives of protecting producer incomes and/or ensuring affordability to consumers, stabilization measures may be used to promote agricultural production and national self sufficiency. The assumption is that high and stable prices give farmers the confidence to make the necessary investments to raise productivity.

3.2 How do national reserves affect food prices?

At a first level how effective have national reserves proved in stabilizing domestic prices, and do they raise or lower consumer and producer prices?

Attribution is of course a problem, making it hard to isolate the effects of reserves from other policy instruments – for example import and export policies. Therefore empirical conclusions are often limited to demonstrating a correlation between the existence of a reserve and changes in average price volatility.

Individual studies have pointed to *some successes in reducing aggregate price volatility over time*. For example the Food Corporation of India successfully reduced price variability in wheat between 2006 and 2012 (McCreary 2012), Zambia's Food Reserve Agency's (FRA) stabilized maize market prices throughout the 1996 to 2008 study period (Mason and Myers 2011) and the National Cereals and Produce Board (NCPB) in Kenya stabilized maize market prices in Kenya between 1989 and 2004 (Jayne et al 2008).

Domestic price instability, and consequently the *potential* for price stabilization, tends to be highest in inland Africa. This is especially the case for countries close to self sufficiency but susceptible to high inter-annual variability in production, and where high transport costs drive a large wedge between import and export parities. For example, in Ethiopia the wedge between import and export parity has allowed maize prices to fluctuate over recent years between about US$ 50 to nearly US$ 250 per ton in Addis Ababa. A similar situation is noted in Malawi (Byerlee et al 2006). Dana and Gilbert (2008) note that the cost of transporting maize into Malawi from South Africa can rise sharply during a shortage as the result of limited truck capacity.

However, the in practice the performance of many African stabilization reserves has been disappointing. A report to the G20 cited repeated evidence that releases are made too late to influence food prices or to safeguard food security (FAO 2011).The NEPAD report (NEPAD ibid) made a particularly damning assessment of many African reserves. A similar negative conclusion was drawn on the operation of the Strategic Reserve Corporation in Sudan (Ahmed et al 2012). The case of Malawi was discussed by Devereux (2002). *Poor governance is a major problem*, with many poorly performing reserves, often caught between conflicting objectives.

Box 1: **Community grain banks**

Some African countries (including Burkina Faso, Burundi and the Gambia) have focused on building village-level grain reserves (Viatte et al 2009).

Community grain banks are reported to be popular in Burkino Faso, as a tool to promote food self-sufficiency. Grain prices are fixed by the village group to provide a balance between the low prices at the end of harvest and the high prices charged by traders later in the year. When food is in short supply, grain is sold to villagers. Challenges include good bookkeeping in a rural and low literacy environment, problems of debt recovery and liquidity. However, evidence on the operations of such community grain banks remains largely qualitative and anecdotal.

Evidence indicates that *in general reserves tend to increase average prices* (McCreary 2011). Zambia's Food Reserve Agency's (FRA) is estimated to have raised mean maize producer prices by 17% and consumer prices by 19% between 1996 and 2008 (Mason and Myers 2011). In Kenya the National Cereals and Produce Board is estimated to have raised average price levels by roughly 20% between 1995 and 2004 (Jayne et al 2008). Yao et al. examined the Philippine government's price stabilization policy for rice over a 21-year period (1983 to 2003) and conclude that it led to moderate increases in producer and consumer prices (Yao et al 2005).

For producer prices in particular there is an evident tendency for prices to drift upwards. As Gilbert pointed out (2011) intervention prices are rarely corrected down to reflect global price trends. The impact on consumer prices is more variable.

Another concern is that if the basis for Government intervention in markets lacks transparency and predictability, this creates risks and costs for private traders. Consequently traders refrain from imports. Evidence cited to support this position is that domestic prices often exceed import parity in several inland African countries which implement reserve backed market interventions (Jayne and Tschirley 2009).

There is general agreement that *downward prices tend to be modulated better than price spikes*. The asymmetry of price variations means that floor prices tend to be activated more often than ceiling interventions. In addition the effectiveness of stocks in containing price rises is limited by storage capacity. Once its inventory is exhausted, a buffer stock has no other means of limiting price rises. Intervention is therefore more effective in limiting price falls than in curtailing the incidence and magnitude of spikes (Wright 2012).

For a national reserve to work efficiently it needs to be implemented in conjunction with other policies that insulate the local economy from the world market, otherwise the stabilization effects will inevitably leak into world markets (Gouel and Jean 2012, HLPE 2012). Simultaneously it is also accepted that these trade barriers – such as export bans – act to displace and exacerbate price problems at the global level[7]. Therefore, the conclusion is that *domestic price stabilization may only be achieved at the cost of greater price instability for other nations*. For example, whilst India largely avoided the 2008 price spike through imposing a rice export ban, this greatly increased price volatility in its main export market, Bangladesh (Dorosh 2009).

3.3 Food security impacts of price stabilization

The subsequent question concerns the food security impacts of stabilization reserve operations. The immediate question is what effect do the changes in producer and consumer prices have on food security outcomes. A secondary question concerns the comparative effectiveness of using reserves to promote food security and the opportunity costs of operating stabilization reserves.

Consequences of modified producer and consumer prices

The evidence suggests that a common feature of stabilization activities is to increase producer prices – and often consumer prices as well - and this effectively results in transfers from consumers to producers. As the majority of the food insecure - including small-scale farmers - are net food purchasers[8], this constitutes a regressive food security policy.

[7] The imposition of a rice export ban by India in 2008 led to significant rice price inflation in Bangladesh, which is normally a major importer from India. It is also cited as a major contributor the significant price spike in global rice prices.

[8] Approximately 60 per cent in Kenya and Ethiopia (Galtier 2011)

The evidence also shows that amongst producers, the short-term benefits of raised prices tend to be captured by the more affluent and food secure farmers. In Kenya, about 3 percent of all farmers sell 50 percent of the marketed maize and regularly benefit from NCPB procurements (Jayne et al. 2008). In Zambia, about 5 percent of all farmers account for half of the national maize surplus and benefit from the reserve backed high prices (Nkonde et al. 2011).

Ultimately artificially elevated prices may not be in the producer's best interests. This leads to production inefficiencies and eventually painful adjustments to market realities.

As Timmer (2010) points out for Asia, if the policy goal is food self-sufficiency, a policy of high rice prices can successfully increase domestic production. But if this strategy forces poor consumers to pay high prices for rice, then it increases considerably the degree of poverty in a country. Self-sufficiency in rice is a political strategy, not a poverty or food security strategy.

Open market interventions or targeted transfers?

Where reserves are used to subsidize consumer prices a policy question is whether this task is best achieved through managing open market prices or targeted transfers to food insecure households and individuals. In effect this compares the effectiveness of emergency and stabilization reserves.

In terms of economic efficiency the answer is clear. It is far more cost efficient to use targeted transfers as opposed to general market subsidies. Wodon et al. (2008) note that the targeting efficiency of social protection policies in sub-Saharan Africa is much better than that of other economy-wide policies, such as tax cuts, tariff reductions, and subsidies.

However, policy arguments remain from an effectiveness perspective for using general subsidies. Targeted distributions may not be able to be scaled-up in time to meet needs. "*Targeting income support is a challenge even for Western nations where only relatively small numbers of people require assistance and complex bureaucracies already exist. To expect multilateral agencies, international NGOs and national governments to quickly identify vulnerable households and support their incomes in a timely manner to respond to sudden price spikes is unrealistic*." (McCreary 2011). The logic is that where a large proportion of the population is affected it may therefore be preferable to use a general subsidy.

The counter-argument is that price reserves have a better track record as a rapid response mechanism by supporting untargeted market interventions. The quantitative evidence for either position is weak and at best appears to suggest that management challenges constrain the effectiveness of both approaches.

A second policy based argument has been advanced that in the face of *transitory spikes* governments could justify using reserves to insulate domestic prices on efficiency and equity grounds. "*As a programme to reduce chronic extreme poverty, a conditional transfer is definitely more effective than a general price subsidy. However, as a temporary measure to insulate domestic prices from unstable and distorted international food markets, general food subsidies-cum-price controls may be a suitable measure as long as the government has the fiscal resources to do it without cutting other programmes for the poor*" (HLPE 2012). However, the question is whether reserves can reliably differentiate, and respond to, 'price bubbles' rather than what is rational market behaviour. There seems little evidence to demonstrate that this skill exists - suggesting potentially costly and ineffective interventions that 'bet against the market' (Wright 2012).

Opportunity costs of stabilization reserves

In theory the operation costs of a stabilization reserve should be modest or even self-financing – buying stock when prices are low and selling when high. In practice it has proved exceedingly difficult to operate reserves on this basis.

Reserves have become a major drain on fiscal resources. Evidence from the World Bank (2012) estimates that total fiscal costs ranged from 0.5 percent of Gross Domestic Product (GDP) in Indonesia to 1.5 percent of GDP in India and 1.9 percent of GDP in Zambia in recent years (World Bank, 2012). Ultimately fiscal costs of stabilization reserves tend to overwhelm budget resources (HLPE 2011). Unsustainable costs caused the demise of farm support policies in the EU and US, despite the stronger public fiscus - and this lesson should be heeded.

A typical consequence of reserve operations is stock accumulation as stocks are bought at elevated prices and governments are reluctant to resell at a loss. This happened in the EC in the 1980s and 1990s and as is currently occurring in Thailand and India[9]. This has huge costs for the public purse in terms of storage and

[9] Thailand has accumulated 12 MMT of public rice stocks .

wastage. However, the total costs of buffer stocks include many other less visible cost elements. In Zambia, storage costs were estimated to account for only 18 percent of the total fiscal bill in 2011/12 (see Table below). The most important cost element was a subsidy to finance the difference between high prices paid to farmers and low prices for urban consumers.

COST ELEMENTS	US$ MILLION	PERCENT (%) OF TOTAL
Storage costs	63.0	17.9
Financing costs	38.0	10.8
Transportation of procured maize	55.0	15.6
Bagging and re-bagging	25.1	7.1
Food subsidy (release price – procurement price)	150.0	42.5
Construction of hard standing slabs	15.0	4.3
Rehabilitation of grain silos	6.7	1.9
TOTAL COSTS	**352.8**	**100.0**
Total costs as a share of total budget expenditure	8.2%	
Total costs as a share of GDP	1.9%	

Source: World Bank (2012)

The World Bank argues that the scale of these operational costs has major opportunity costs. *"Spending on stocking programs is often about the same or even exceeds spending on agricultural research and other agricultural programs, which are fundamental to increasing long-term agricultural productivity in these countries. In other words, high spending on public stocks does not leave much budget space for the long-term investments that are absolutely necessary to improve the food security of vulnerable populations"*. Therefore the World Bank argue for re-orientating investment to increasing agricultural production and the resilience of agricultural production to shocks.

COUNTRY	SPENDING ON PUBLIC STOCK PROGRAMS (% OF GDP)	SPENDING ON AGRICULTURE (% OF GDP EXCLUDING [A])	SPENDING ON AGRICULTURAL RESEARCH AND DEVELOPMENT (R&D) (% OF GDP)
	[A]	[B]	[C]
India	**1.0%** (2004/05) to **1.5%** (2008/09)	**1.2%** (2008/09)	**0.06%** (2008/09)
Indonesia	**0.5%** (2008–10)	**0.8%** (2008)	**0.05%** (2003)
Philippines	**0.4%** (2005/06) to **1.0%** (2009)	**0.8%** (2005)	**0.06%** (2002)
Zambia	**0.3%** (2009) to **1.9%** (2011)	**0.6%** (2010)	**0.15%** (2010)

Source: World Bank (2012)

3.4 Policy alternatives for price stabilization

To further complicate decision making there are a large number of alternative or complementary policy instruments that might be used to stabilize prices. Some of the more promising ideas are listed below[10].

- Develop market instruments to manage risk (warehouse receipt systems, futures and options contracts, index based weather insurance. (Byerlee 2006, NEPAD 2004).
- Transparent national policy on external trade - Governments providing clear intentions on import tariffs.
- Improved information on public and private stock holdings. Mandatory reporting regarding stocks, something equivalent to the reporting system created in the banking sector after the financial crises (HLPE 2011).
- Diversion of animal feed and bio-fuels for human use in case of price surges (Wright 2009b)

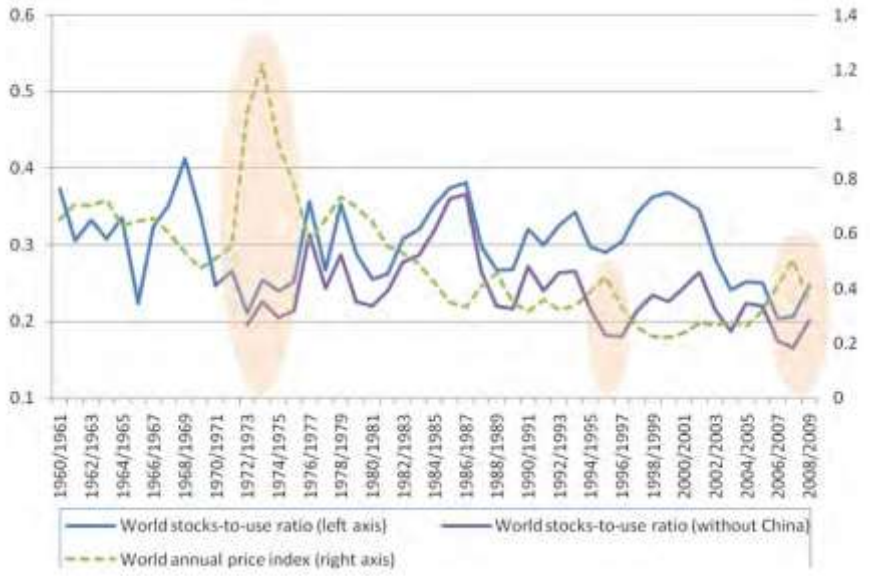
[10] A discussion of a fuller list of options can be found in Wiggins and Keats 2009.

- Encourage increase of private storage; REPO system in Malawi (Jayne 2008), regulation of private stocks in Singapore[11] (Timmer 2010).

A full analysis of these alternatives is beyond the scope of this paper. However, the point is that a range of policy alternatives exist, several of which are low cost. The relevance of a public stabilization reserve will necessitate a comparison with alternative or complementary mechanisms in any specific context.

3.5 A role for a global reserve?

There is strong evidence that low aggregate global stocks are associated with periods of high price volatility. It is argued that global price spikes only occur when stocks are near minimum levels (Bobenrieth and Wright 2009). The periods when aggregate stocks were very low, the early 1970s, 1996/1997, and 2007/2008, are all years of sharp upward spikes in the price index from a generally decreasing trend[12].



Source: Bobenreith and Wright 2009

Food scientists and economists have historically argued that countries need to keep stocks of around 17–18 percent of total consumption or use levels, although no precise figure is agreed. Below this relatively small changes in supply at low levels of stocks can result in rapid price changes. Whilst low stocks are not *per se* a cause of price volatility, it may create a heightened sensitivity to disruptions to supply or changes in demand.

The potential risks of running down global grain stocks was clearly identified well in advance of the 2008 crisis (Mitchell and Le Vallee 2005). According to Wright (ibid) the underlying problem in the lead-up to 2008 was that demand outstripped supply. Demand rose rapidly from more affluent consumers in Asia and a rapid expansion in demand for maize for bio-fuel production. As discretionary stocks – public and private – were depleted, the ability to buffer shocks was lost. The Australian drought may have been the trigger – and the inelasticity of demand for food consequently resulted in a rapid surge of prices. This situation was then exacerbated by beggar-my-neighbour policy choices - such as rice export bans in Asia.

This line of reasoning leads naturally to a consideration of whether expanded *public stocks* would serve to calm markets, and mitigate future price spikes. If one of the main causes of the food price spike was the low ratio of stocks to use, as Wright (2009) argues, then increasing physical stocks becomes a priority.

IFPRI, HLPE (2011) and others have been strong proponents of an international instrument, to complement national reserves, in managing major price spikes (von Braun and Terero 2008). McCreary proposes a global wheat reserve, to replicate effects of US stocks in previous decades. The Chief Economist of the World Bank

[11] To obtain a license to import rice into Singapore, the trading company must agree to hold three months of normal consumption in storage (Timmer, 2010)

[12] Wright (ibid) explains the exception of 2002/2003 as around that time China exported massive amounts of cereal stocks. Unusually large amount of maize from its huge accumulated stocks, as well as a very substantial amount of wheat, cushioning the market in the rest of the world. It did not do this in any other of the high price periods mentioned above.

has proposed a UN agreement internationally where countries would hold public stocks as a percentage of annual use. These stocks would then be released onto the world market when a price spike was forming (Lin 2008).

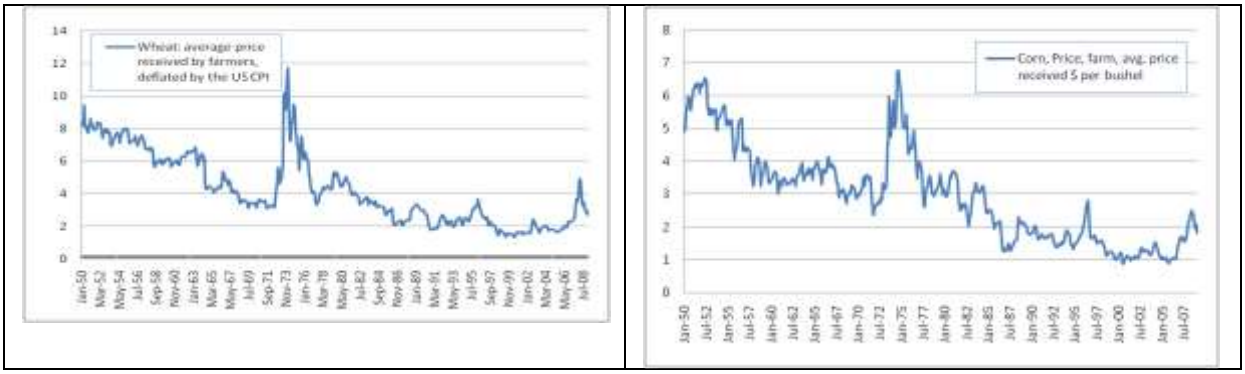
The evidence on the effectiveness of a large global stock is limited. History and theory (Newbery and Stiglitz 1981) demonstrate that it is impossible to stabilize the price of a commodity in world markets for long periods of time using internationally managed buffer stocks. A frequently cited precedent is the failure of the International Commodity Agreements. Chris Gilbert (2011) and others extensively document the reasons for the failure of international buffer stocks.

Proponents counter that the historical experience of international buffer stocks that were intended primarily to support prices does not teach us how to avoid price spikes. A new reserve would not try to defend a price band - but to avoid price spikes by releasing stock when prices start to boom.

The feasibility of this proposal looks dubious. The cost of this proposal looks substantial. If the two years running up to the price spike saw global grains use exceed supplies by around 70M tonnes (FAO Outlook data) and it costs US$15 a tonne23 to store cereals, then to store this amount would require US$1.05 billion a year (Wiggins and Keats 2009).

At global level the US and EU are unlikely to re-institute large public stocks. The international community is therefore left with a collective action problem. Can the burden of world stocks be shared? Whilst considerable progress was made after the price shocks of the mid 1970s towards establishing a global reserve, ultimately lack of agreement on finance and management proved the key stumbling block.

The justification for a new global reserve is underpinned by an assumption that we are entering a new era of higher and more volatile prices. However, this is not backed by strong evidence. Judged against previous years the grain price peaks of the last few years, adjusted for inflation, are not particularly high (Wright 2012).



Source: Wright 2012

Proponents of a market based approach argue that over a long period world markets and trade have been stable and a source of food security (World Bank 2005). Global markets have successfully weathered a number of major supply and demand shocks – and the exceptional convergence of events in the lead up to 2008 should be acknowledged. In the last two decades, there were profound structural shifts in trade patterns and a gradual reduction of stocks. The collapse of the Soviet Union; import growth in Asia, and production growth in South America each represented significant shifts to global agriculture. These dramatic shifts in grain trade were all absorbed without significant increases in price volatility (McCreary 2011).

Box 2: **Stabilizing global prices through intervention in the futures markets?**

At the height of the world food crisis IFPRI put forward a proposal to create “virtual reserves” of grain to dampen financial speculation on world grain markets (von Braun and Torero, 2008). This would require an estimated capitalization of $15-20 billion.

However, various questions have been raised on the feasibility and effectiveness of this proposal:

There is no clear evidence that speculation on the future market was to blame for price increases in 2008.

The alternative explanation is that the price spike was a consequence of demand outstripping supply, the run-down of

global stocks and the price inelasticty of both supply and demand.

There is no evidence that futures markets have increased price volatility over the long-term. Rather the opposite that they have moderated fluctuations. But a common negative populist perception of these instruments remains.

From a feasibility point of view there is no reason to suppose that the experts managing the fund would be able to outguess market. "*However, one of the biggest criticisms of this type of virtual reserves is how difficult it will be for whoever is responsible to be certain that markets are out of equilibrium and that proposed interventions will not do more harm than good under any given circumstances"* (Wright 2009).Therefore the fund will eventually lose money and exhaust its funds.

More research is needed to prove causal linkages between futures prices and spot prices. Especially in the case of rice virtual reserves will not influence real participants in real transactions.

Source: Timmer 2010; Jacks 2011, Wright 2009

Opinion remains clearly divided on the merits of establishing a global stabilization reserve. It is unlikely that empirical evidence will be able to conclusively resolve these debates. Given the huge costs and uncertain benefits it is perhaps unsurprising that concrete action is yet to follow the policy level discussions.

3.6 Summary

From an economic and welfare perspective, stabilization reserves have proved relatively expensive and ineffective. Most international experience (as well as economic theory) suggests that market mechanisms are generally more efficient over time in achieving price stabilization objectives (Byerlee et al. 2007). A major constraint to the use of stabilization reserves is the high fiscal cost, which exceeds the budgetary capacities of many countries.

4 Social safety net stocks

A third use of reserves is as a stock for implementing regular food distributions. This can include feeding the army, police or other categories of civil servants. However, what is most pertinent from a food security perspective is backstopping regular food distributions through social safety net programmes. This function is distinguished from an 'emergency' reserve as it responds to chronic, rather than transitory, food insecurity. This requires management of a predictable food pipeline as opposed to a contingency for unforeseen events.

The growth of safety net programmes in recent years has seen a corresponding rise of interest in this reserve function in the literature. Many national reserves are already engaged in this role. Examples include:

- Support to school feeding programmes.
- Food for work programmes and other targeted food distribution programmes such as the Ethiopia Hunger Safety Net Programme.
- Targeted subsidized food sales, e.g. subsidized sales in India, Pakistan and Bangladesh (Dorosh 2009)

The operation of a food based social safety net is clearly not dependent on the existence of a food reserve – other public or private options can be employed to support food deliveries. A social safety net is not generally used as a justification for the establishment of a reserve in itself.

Where (a) a food reserve exists, and (b) a decision to employ food based safety nets has been taken, then there may be reasons for associating these operations. Principally linking social safety nets to a food reserve offers a useful mechanism for stock rotation and decreasing operational costs of grain reserves.

One variant lies in linking social objectives to food procurement for social safety net programmes. For example the WFP P4P programme and Brazilian Fome Zero programme. Here there are trade-offs between efficiency and social objectives (World Bank 2005). This model is discussed in detail in another paper in this series.

5 Concluding comments

The evidence on the impact of reserves is summarized below, reorganized according to the pillars of food security; availability, access and utilization:

Table 1: **The impact of reserves on food security**

Food Security Pillar	**Impacts**
What do we know about the impact of Food Reserves on availability?	Food Reserves can contribute to increasing food availability through influencing the level and volatility of producer prices. High and stable prices, backed by reserve operations, can help give farmers the confidence to make the necessary investments to raise agricultural productivity. Individual case studies identify success in *reducing aggregate price volatility over time*. Evidence also shows that *in general reserves tend to increase average producer prices*. These market price effects appear to be effective in stimulating domestic production and stock accumulation. However, the management of many stabilization reserves has been poor and problematic - reducing impact - for example the Malawi Strategic Grain Reserve in 2002. Poorly operated reserves can displace or even discourage private storage. Stabilization reserves have often proved a major drain on government resources. This tends to squeeze out investment in other investments to improve long-term agricultural productivity. Ultimately the cost of stabilization reserves tend to be unsustainable. There is a continuing debate between those advocating that the best route to price stabilization lies in further liberalization of trade, and those who perceive occasional but major market failures warrant ensuring the capacity of Governments to intervene.
What do we know about the impact of Food Reserves on access?	Food reserves have potential impacts on food access through direct impacts on farm incomes, by modifying consumer prices and the affordability of food, and by facilitating food aid transfers. <u>Farm Incomes</u> Reserves intervene relatively frequently to protect floor prices, with the goal of protecting farm incomes. However, the evidence shows that the short-term benefits of raised prices are largely captured by the more affluent and food secure farmers. <u>Consumer prices</u> In many cases reserve operations have also led to *higher consumer prices*. This is attributed to both the direct and indirect effects of reserves - government interventions in the market serve as a disincentive to private trade. As the majority of the food insecure - including small-scale farmers - are net food purchasers, this may increase the degree of poverty in a country. The effectiveness of stocks in containing price spikes is limited by storage capacity. Once its inventory is exhausted, a buffer stock has no other means of limiting price rises. At the global level there is strong evidence that *low aggregate global stocks are associated with periods of high price volatility*. This finding has led to arguments for increasing physical stocks at national, regional and global level. However, history and theory demonstrate that it is impossible to stabilize the price of a commodity in world markets for long periods of time using internationally managed buffer stocks. <u>Food transfers</u> The literature broadly *supports the use of small-scale emergency reserves at national level.* Size and operating costs are typically sustainable and if well managed they generate few market disincentives. Case studies show both positive examples of emergency reserves (Ethiopia's Emergency Food Security Reserve Administration) and 'failures' such the Malawi Strategic Grain Reserve. The quality of governance and management is key.

	As policy and practice moves away from food aid, to a diversified set of food assistance interventions, the role for traditional emergency food reserves may decline. The establishment of regional and global emergency reserves has been advocated. However, past experience, questions of feasibility and governance, along with viable alternatives, leave the added value uncertain.
What do we know about the impact of Food Reserves on utilisation and nutrition?	Very little empirically. The nutritional impact of food reserves tends to be rather indirect, modulated by the intermediate effects on incomes and prices. An effective emergency reserve should include the storage of diverse and specialized commodities, such as energy rich Ready To Use Foods. This implies a very different operational model from the common practice of operating an emergency reserve as a subsidiary function to a grain stabilization reserve.

Ultimately, the appropriateness of a food reserve will depend on a wide range of *context specific factors*. This includes the food security situation, the interplay with other policies and instruments, the objectives of the reserve and availability of resources. However, a number of over-arching conclusions can also be drawn out of the analysis.

(1) Evidence to support use of stabilization reserves is weak ... but political arguments are strong

From an economic and welfare perspective, stabilization reserves have proved relatively expensive and ineffective. A major constraint to their use is the high fiscal cost, which exceeds the budgetary capacities of many countries. Most international experience (as well as economic theory) suggests that market mechanisms are generally more efficient over time in achieving price stabilization objectives.

Despite this rather negative assessment of the effectiveness of reserves governments have resisted advice (principally by the World Bank) to cut costs and reduce stocks. Stocks in developing countries in particular have been growing strongly, particularly since the first global food price spike in 2008. Total stocks in developing countries as a group grew from 228 million tons in 2006/07 to 328 million tons in 2010/11 (up by 42 percent) and are projected to increase further to 343 million tons in 2011/12 (up by 51 percent compared to 2006/07), according to the U.S. Department of Agriculture.

The main driver of this appears to be insurance against a failure of the international markets. Lingering doubts on the trustworthiness of private trade to provide for national food security were exacerbated by the 2008 crisis. Reserves are a logical response to fears about the reliability of international markets. The political costs of unpreparedness or inaction are too high to bear for states where food still represents a major share of households' budgets. For developed nations food price inflation is an inconvenience that can be tolerated, without the same political repercussions.

(2) Broad support for <u>emergency reserves</u> at national level

There is widespread *support for a small emergency reserve* to ensure that food aid is readily available in a crisis. This is partly grounded in the finding that is far more cost efficient to use targeted transfers as opposed to general market subsidies (Wodon et al. 2008). However, the necessity of an emergency reserve is still a context specific decision - dependent on the local food security and a comparison with alternative food assistance instruments.

(3) Added value and feasibility of new regional and global food reserves is questionable

Recent attention has focused on establishing reserves at regional and global level, based on arguments of enhanced preparedness and efficiencies from risk sharing. However, there are considerable financial and administrative challenges to working at this level. Coordination challenges and trust issues across national borders have complicated implementation. Historical experience has been rather negative - suggesting a cautious approach.

(4) Situate the role of a reserve in a wider policy context

Reserves are one possible instrument to contribute to food security. Public grain stocks need to be incorporated into a coherent longer-term strategy that combines the use of trade, investments in agricultural

productivity, and well-managed, targeted safety net programmes. The option of not holding a reserve could well be appropriate for some countries. As argued by Dorosh (2009) national policies are likely to involve some combination of:

- national stocks to prevent very large price increases,
- reliance on international trade to limit the need for government interventions in most years,
- promotion of domestic production through investments irrigation, research and extension that is economically efficient when evaluated at medium-term border prices, and
- targeted (ideally cash-based) safety net programmes to address the food security needs of poor households.

The evidence suggests that reserves can play a limited but important complementary role in improving food security, complementing a broader non-stock strategy that addresses both the resiliency of rural livelihoods and social safety nets. The appropriate design and implementation of these broad food policy guidelines will necessarily vary according to individual country conditions.

(5) Good governance is a pre-condition for success

A pre-condition for effective reserves operations is good governance and strong management. One general observation from the literature is that confounding emergency and stabilization objectives in one agency leads to contradictory goals and undermines performance.

A number of studies reach similar conclusions on key operating principles. For example Tostao and Tschirley (2010) argue that if the government chooses also to maintain a public physical reserve, then the conditions for operating this in a manner that improves market performance are:

- Central Bank type autonomy, with independence from political process and clear and well defined objectives,
- highly professional management with a good information system and strong analytical capacity,
- flexibility to hold the combination of grain and financial reserves that minimizes costs with acceptable risk, and
- clear and open rules for market intervention to ensure transparency in its interventions.

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