Since the financial and food price crises of 2007, market instability has been a topic of major concern to agricultural economists and policy professionals. This volume provides an overview of the key issues surrounding food prices volatility, focusing primarily on drivers, long-term implications of volatility and its impacts on food chains and consumers.

The book explores which factors and drivers are volatility-increasing and which others are price level-increasing, and whether these two distinctive effects can be identified and measured. It considers the extent to which increasing instability affects agents in the value chain, as well as the actual impacts on the most vulnerable households in the EU and in selected developing countries. It also analyses which policies are more effective to avert and mitigate the effects of instability.

Developed from the work of the European-based ULYSSES project, the book synthesises the most recent literature on the topic and presents the views of practitioners, businesses, NGOs and farmers’ organisations. It draws policy responses and recommendations for policy makers at both European and international levels.

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Chapter 12
Coping with food price volatility
The contribution of local food reserves

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1  Introduction: contextual factors for local food reserves in low-income countries

Food price volatility (FPV) is a multidimensional issue. This necessarily implies that solutions must also be multiple and must be adopted at different levels, from local to global. Partial solutions can only achieve a limited degree of success and can neither prevent nor address the problem as a whole. Since the role of states in reducing, managing and coping with volatility is addressed in several chapters in this book, we will focus on the relationship that should exist between state initiatives related to food reserves and local initiatives promoted by NGOs.

Food reserves held by public agencies are controversial because managing them can have unintended effects on the markets where they intervene. But even if they are a matter of intense debate, food reserves or at least interventions in the grain markets are part of the reality: 23 countries in sub-Saharan Africa have made some kind of intervention in grain markets, most of them subsidizing food (FAO, 2009). Food reserves are required because markets are never perfect; regardless of their shortcomings, attaining food security and guaranteeing the right to food are important questions that require effective policies and interventions. Hence, the policy response cannot be to ignore these interventions, because we know they can harm the market and hinder efforts to improve food security. We, as practitioners and scholars, have spent years discussing this issue, given that the urgent need to intervene when people are suffering the effects of hunger is not easily compatible with avoiding harm to markets.

Governments have to act when there are sudden price spikes and falls, because they affect a large percentage of the population in countries where people spend high percentages of their income on food. Even in rural areas, most grain producers are net buyers of food (Barrett, 2008). In these circumstances, targeted social protection is crucial, even in the absence of price spikes. But is it possible to think, plan and execute targeted responses when a price spike affects millions of people? It is often said that state interventions cannot beat the market. But doing nothing to tackle price spikes is not an option; political needs (i.e. avoiding riots in the cities) will also have priority over economic orthodoxy.

Food reserves’ efficacy is well proven. Indonesia, India and China, for instance, have been able to safeguard their populations from volatility by managing their food reserves and grain imports (Dawe and Timmer, 2012). But this does not
mean that secondary effects are absent. Their crowding-out effect can harm temporal and spatial arbitrage and this affects not only grain traders. Farmers’ initiatives aimed precisely at coping with FPV and trying to take advantage of price cycles to obtain a higher percentage of margins in the value chain are also impaired.

As a result of farmers’ need for cash after harvest (to pay credit, school fees and so on) and poor storage capacity, farmers tend to sell off their production (see Figure 12.1, points 1 to 3). They then become net buyers and often

Figure 12.1 Causes of food insecurity for poor agricultural producers. Source: Pons Cortès and Gómez (2012).
have to pay much higher prices for the ‘same grain’ when food becomes scarce (just before the next harvest; point 10). In order to solve this old and well-known problem, farmers organise themselves around cereal banks or other similar initiatives (generically, local food reserves, or LFR). Even though many in the development cooperation industry think that this is a failed solution buried by history, a mapping exercise of cereal bank federations carried out by Oxfam\(^1\) shows that local food reserves are quite alive and showing good outcomes more often than might be expected. Some of their modalities, e.g. warehouse receipt systems (WRS), are being promoted all across Africa.

Local food reserves (particularly those that seek to increase food availability) can protect rural households from annual price spikes by stocking enough reserves to lower the price during the sowing season, when prices are usually higher. This can be done only to a certain extent: LFR are procyclical, just like national reserves, which implies that they are better stocked when the needs are less likely, and vice versa. Nevertheless, they are able to provide better prices to their members and/or users even in bad years.

Not all LFR sell at lower prices during the lean season. There are commercial LFR that aim to increase farmers’ income by selling their stocks at higher prices, thereby overcoming their need to sell off just after the harvest. Sometimes both objectives coexist in the same LFR, managing both kinds of stocks.

### 2 Local food reserves can bring about other beneficial effects

LFR can strengthen other food security strategies because many activities take place around them. For instance, many organisations take advantage of the LFR to promote mechanization, credit and the improvement of agricultural practices (points 5, 8 and 9 in Figure 12.1). The latter is, according to Coulter (2006), the most revolutionary change that LFR can bring.

LFR carry out social protection initiatives in those places where state safety nets do not suffice or are non-existent. This is far from an ideal scenario, since it involves poor people taking care of others who are even poorer. LFR can protect livelihoods, to the extent that they allow people to continue with their economic activities during the lean season by avoiding migration and the selling of assets.

LFR also help to overcome the negative effects that isolation has on food security, since having local reserves in remote areas during the lean season can save transport costs to the nearest town to buy grain. Stability also implies that prices before the harvest should not be lower than after the harvest.

Finally, LFR empower populations, making them capable of undertaking new economic activities, decreasing dependence on middlemen and promoting social cohesion. This is especially the case for women.
3 Sources of vulnerability of local food reserves

There are three main reasons why LFR are vulnerable:

- Vulnerability to climate. Many LFR are in drought-prone areas and grains are produced mostly in rain-fed regimes. Drought often results in credit default. Moreover, turnover in drought years is lower, so LFR’s incomes decrease.
- Bad promotion, planning or design as well as bad management.
- Price cycle inversions (i.e. paying higher prices when building stocks than the prices obtained in return when drawing them down).

3.1 Vulnerability to climate

Climate vulnerability can be tackled using index insurance. Index insurance is not new. But combining index insurance with social protection is new. Oxfam has developed an ‘insurance for work’ scheme in Ethiopia, the R4 programme, in collaboration with the World Food Programme (WFP) and the government of Ethiopia: people work in WFP programmes and obtain in return an index insurance policy for cereal production.

Insurance can also be seen as a tool to improve targeting and avoid moral hazard: in the areas insured by farmers’ organisations, those people who had voluntarily insured their production should have an advantage, for instance seeing their debt with the organisation cancelled.

Insurance is expensive and not sustainable before it reaches a critical mass. It is widely subsidized in rich countries and the same should be done in poor ones, especially when trying to offer insurance to the poorest people.

3.2 Needs of training and support

Design and management problems need training and support. Training is particularly necessary at local government levels and for farmers’ organisations to improve management of these initiatives, which are often present in the least developed areas with high levels of illiteracy. Support must come from federations of local reserves: only when LFR link up do they have the capacity to share resources. In the mapping carried out by Oxfam, we saw that the LFR that survived were those linked to a federation.

3.3 What is needed: creating and linking information systems at different levels

Any form of coordination requires energy and information as fundamental inputs. Some years ago, it would have been utopic to think of an information system capable of keeping accurate data on stock levels and their specific location. Mobile technology, massive SMS sending, web mapping and GPS make information management easier.
Nowadays it is possible to know **when, where and for whom** to intervene. The more accurate the information is, the more possible it is to avoid harm during interventions. Cereal banks must be included in information provision for the national early warning systems in order to: (a) add information about food security using their own performance indicators as a proxy, and (b) provide information about the areas where government interventions must be channelled through farmers’ organisations, in order to avoid harming them. An example of how this can be done can be consulted here: [http://foodreserves.org/privat/](http://foodreserves.org/privat/).

### 3.4 Price cycle inversions are a more complex matter

No matter how well governments plan their interventions to lower a price spike, the market (local traders and farmers’ organisations included) can be affected.

Price risk, from the perspective of local food reserves, is defined as the probability of purchasing grain at a price above its selling price. Price risk is not the same as price variation. The latter is necessary in order to cover related costs (such as maintenance, storage and transport). If the price is not higher at the end of the season than at the beginning, no trader will be willing to store. Price variation between seasons is also necessary in order to give signals to farmers to invest more or less in a crop, according to its abundance or scarcity in the market.

Two consecutive years with this problem can push LFR to bankruptcy. It is needless to recall that we do not only want stable and ‘enclosed’ price cycles, but also cycles that are wide enough to allow for temporal and spatial arbitrage.

According to a research analysing grain prices in Niger and Mali (CREDA-UPC-IRTA, 2013), cycle inversions can happen as often as one out of three years in some markets. Volatility is high and there is no easily identifiable pattern. In some cases, two good harvests in a row can be the cause, but in many occasions these inversions are due to government interventions in grain markets.

Food aid interventions can harm in different ways:

- They lower prices in markets when WRS or cereal banks have to sell. For instance, in research carried out in Niger during 2014, we asked the management committees if subsidized food interventions from government were causing losses, and 42% of them answered positively.³
- They destroy the credit culture. Many cereal banks give credit in grain during the hunger gap. If there is an intervention that does not take this mechanism into account, people do not repay their credits, arguing that aid interventions were part of a donation.

Avoiding these problems is not easy and the options have not been widely tested. Two sets of clear actions arise:
Avoid harmful interventions should be the rule in rural areas.

• Coordinating national food reserves and local initiatives is the way to do it. For instance, contacting managers of local food reserves before selling at subsidized prices in the villages and channelling food aid through LFR in exchange for a little commission. A common political problem is that governments often prefer to channel food aid through the political authorities in the villages. Cereal banks can be seen as politically independent, which is not good if elections are looming.
• Finding better ways to compensate the side effects of government interventions in markets. Use special funds to compensate the cereal banks, warehouse receipt systems and commercialisation cooperatives for the losses caused by food aid interventions.

Supporting local reserves through structured demand.

Another way of offsetting the side effects of national reserves on LFR is to link them through structured demand: part of the grain distributed through social protection programmes, like school feeding, can be provided by poor farmers who need to sell part of their production.

Good examples of this are the programme Purchase for Progress (P4P), from WFP, which aims to integrate marketing commercialisation cooperatives and informal groups as providers of grain for food aid programmes, and the Procurement Governance for Home Grown School feeding project, from the Netherlands Development Organisation (SNV).

3.5 Better social protection and food aid targeting through the involvement of LFR

Community-based information systems can improve the accuracy of information about the state of food security before an intervention is launched. Including LFR in the management of government responses to FPV can improve targeting and will decrease corruption or mismanagement. Many LFR manage their own social protection schemes, reserving a part of their stocks to attend the emergencies of their associates. Their lists of the most vulnerable people are accurate and available. A combination of these lists with the information system can be a powerful tool to improve food aid interventions.

4 Conclusion

Governments should not be responsible for doing everything. Farmers’ organisations are able to develop multiple strategies that can help them to cope with FPV at local level. Even though they are not able to cope with covariate risk, they can cope with minor shocks and help provide the information needed to improve targeting in government responses.
We need to develop instruments that are able to avoid or compensate the harm that government interventions cause farmers’ organisations. This need is detected, but the right instruments are still to be developed. Future research should provide concrete solutions on how to make this much-needed coexistence between farmer’s organisations and the unavoidable government responses to food insecurity a working reality.

Notes
1 See http://foodreserves.org/cartes-stocks/index.php
2 See http://www.oxfamamerica.org/explore/stories/r4-the-rural-resilience-initiative/
3 Mooriben, Fédération des Unions de Groupements Paysans du Niger, is a peasant organisation working in various sectors which takes into account the diversity of family-run farms. It has 63,000 members, of whom 62% are women. See http://www.sosfaim.org/lu/en/our-actions/ Niger-2/ mooriben-federation-des-unions-de-groupements-paysans-du-niger/
4 See http://www.wfp.org/purchase-progress

References
CREDA-UPC-IRTA. (2013). Managing price risk in local food reserves. OXFAM research reports.