Briefing 81

Looking back, peering forward

What has been learned from the food-price spike of 2007–2008?

Steve Wiggins and Sharada Keats

Policy recommendations

- The cereals price spike of 2007–2008 was the result of an unusual combination of circumstances. Future prices will be higher than levels before the spike, but by how much depends on oil prices, climate change, and future diets.
- Detrimental impacts of the price spike on the poor were probably concentrated in low-income countries and may have been less severe than once feared, thanks to rising rural wages in some countries.
- Developing countries should strengthen social protection and ensure good data on key indicators of distress. International development action should continue the increased focus on stimulating agricultural development and reducing child malnutrition.

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The spike in cereals prices on world markets in 2007–2008 (Figure 1), was as unwelcome as it was unexpected. For poor people who spend much of their earnings on food, rising food prices meant hardship. For leaders across the world, it came as a shock because food prices, in real terms, had fallen on world and most national markets for most of the preceding three decades.

It is now five years since the price spike. In the meantime prices have fallen, but there were additional spikes in the prices of maize and wheat in mid-2010 and again in mid-2012, while the price of rice remains perched some $100–150 above the levels seen before the spike of 2007–2008.

So what lessons have been learned from the 2007–2008 spikes and subsequent turbulence? What can we expect for food prices in the future? And, what are the policy implications? This Briefing summarises current understanding, focusing on insights that have emerged in the last few years to modify earlier thinking about the 2007–2008 price spike.

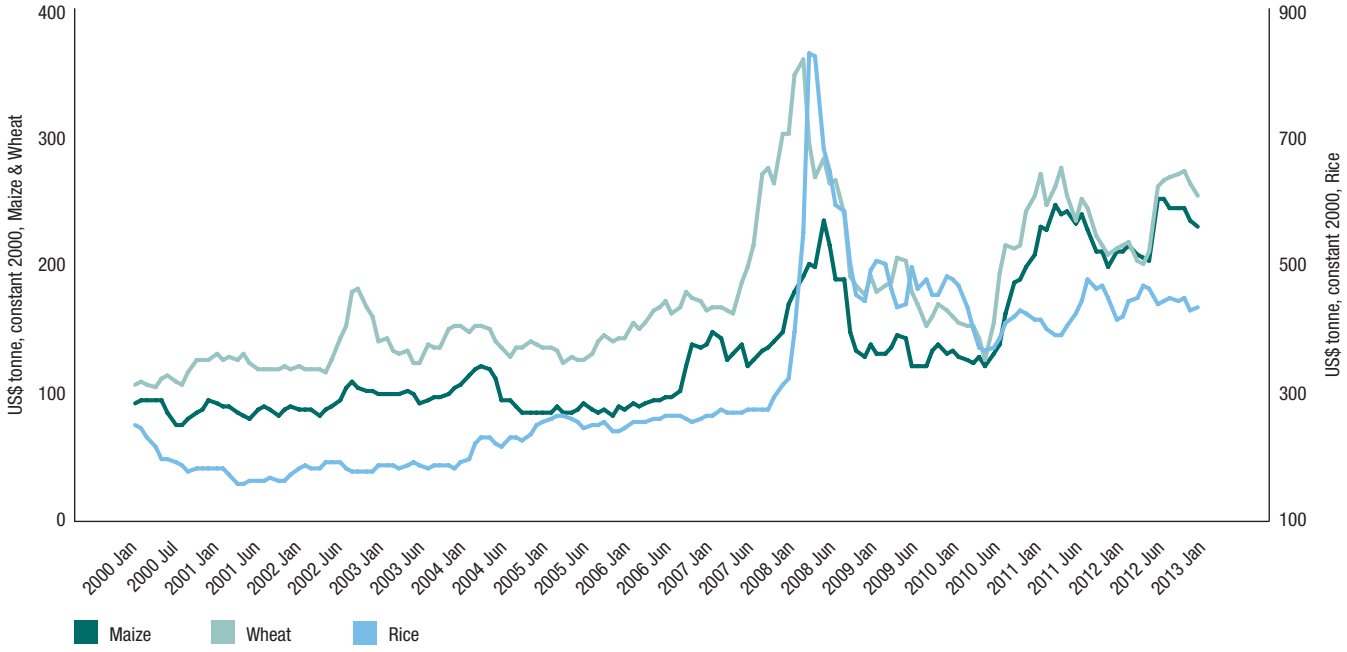
Looking back at recent cereals-price spikes

Causes

The spike of 2007–2008 can be seen as a result of factors operating on different time scales that came together in a 'perfect storm'. Conditions emerged before 2007 that made a spike possible: a slowdown in the rate of growth of cereal production, stocks depleted to a level that could not accommodate short-term shocks, and rising oil prices that not only increased costs of production but also contributed to an extraordinary rise in the demand for US maize to be distilled to ethanol. Prices were, therefore, already rising from 2002 to 2007. In 2006 and 2007 came harvest failures, most notably of Australian wheat. With too few stocks to respond, adjustment then fell on prices. Faced by inelastic demand, made worse by inflexible biofuel mandates, prices rose rapidly in 2007.

Some governments, traders and consumers panicked and reversed their normal behaviour. Exporting countries restricted their exports, while state agencies, traders and consumers restocked in an already tight market, thereby aggravating initial price increases to produce a very sharp spike that saw maize and wheat prices double, and rice prices more than triple.

Figure 1: Prices of maize, rice and wheat 2000 to 2012, constant $



Source: Compiled from IMF commodity statistics, deflating prices by the US GDP deflator.

There is agreement on most of the factors that led to the spike, with the exception of the role of index investment ('speculation') on futures markets. This remains controversial because it is technically very difficult to settle the argument over the impact of these trades. The bulk of the more substantiated evidence we read (for example Gilbert, 2010; Irwin and Sanders, 2010) suggests that index investment contributed little to the spike. Indeed, there is emerging evidence that such investments may have tended to stabilise volatility (Aulerich et al., 2012; Gilbert, 2012).

The subsequent spikes of 2010 and 2012 can be attributed largely to a combination of harvest failures – the Black Sea region wheat crop in 2010, the US maize harvest in 2012 in particular – booming demand for maize in response to the unexpectedly strong growth of ethanol distilling in the US, and depleted stocks that again forced most adjustment on to prices. In these cases, there has been little mention of index investment as a cause; yet the continuing volatility of food prices has been interpreted by some, understandably, as a sign that there are fundamental problems with world food production: that the system is broken. It is far from clear that it is:[1] things happen, many of them by chance.

Public responses

Internationally, the price spike caused consternation and much discussion in G8 and G20 summits, leading to significant reactions. The UN set up a high-level task force to coordinate responses and the Committee on Food Security was revitalised. Funds were promised for rapid reactions, most notably in the L'Aquila Food Security Initiative of 2009 that saw $22 billion pledged for programmes to stimulate agricultural production in the developing world.

At national level, developing-country governments tried to respond, with varying success, by mitigating price rises on domestic markets, protecting those citizens seen to be vulnerable, and by stimulating additional food production. Middle-income countries (MICs) had the capacity and funds to respond to some effect, and had smaller proportions of their populations that were highly vulnerable or farming. Having the means and acting effectively, however, are not always linked. Argentina, for instance, tried to help consumers by restricting food exports, the main effect of which was to undermine production, making it all the harder to dampen domestic prices.

Low-income countries (LICs), however, had few means, either at their borders or on domestic markets, to mitigate price rises. What buffers there were came largely through high transport costs from ports to national markets. This, of course, is a mixed blessing: isolation protects against international market volatility, but leaves countries at the mercy of domestic and regional harvests. Some African countries suffered harvest failures in 2007 and 2008 and then found it impossible to use imports to mitigate soaring prices on domestic markets.

When it came to protecting vulnerable citizens, few LICs had safety nets in place that could be scaled up when prices rose, and countries where half or more of the population were vulnerable simply did not have the resources to provide protection. A clear lesson from the spike is that if safety nets are not in place, they cannot be created quickly enough to make a difference. LICs had some ability to stimulate farming, but even there the scope was less than in MICs: distribution of seed and fertiliser was costly, while promises to farmers of higher prices could not be funded.

Responses were biased towards urban areas. Higher food prices were seen as a threat to poor urban households: in general, there was no appreciation that poor rural households might be equally vulnerable.

Whether in MICs or LICs, most surveys showed that few households received assistance from the state during the food-price spike. Despite considerable public efforts, for most threatened households it was their own ability to cope that mattered.

Impacts

At the time of 2007–2008 spike, impacts were largely inferred from quantitative models and plausible logic. Most expected that high prices would lead to hardship and suffering on a large scale. The World Bank speculated that another 105 million people had been pushed into poverty (Ivanic and Martin, 2008); the United Nations Food and Agriculture Organization (FAO) raised its estimate of the numbers suffering under-nourishment from 848 million to 923 million (FAO, 2008).

Five years on, more evidence of what happened can be found. Many surveys of vulnerable groups at local level in the developing world report hardship, increased poverty and hunger, and desperate measures to cope (Hossain et al., 2013).

Yet a body of quite contradictory evidence now exists. Gallup surveys over the time of the spike indicate that the numbers of people who were food insecure may have fallen by several hundred million; albeit that most of these fortunate people were living in China, India and other fast-growing Asian economies where wages were rising (Headey, 2011). Afrobarometer surveys show increased food insecurity in urban Africa, but more food security in rural areas – where food insecurity was worse than in urban areas (Arora et al., 2012). At the time of the spike, a lone researcher ran a model that predicted that the rural poor of India would benefit from higher rice prices (Polaski, 2008). This forecast has now been proved (Jacoby, 2013) by analysis of data from across India that shows that the welfare of rural households improved with higher prices, the reason being that higher agricultural prices prompt more use of labour on farms and additional

investments, thereby raising rural wages. Those with land benefit most, but the rural landless do also benefit.

A rapid check on child stunting rates seen in national surveys before and after the spike, available for more than 50 countries, shows that the incidence of stunting rose in only six countries: in 37 others it fell, and for some by considerable amounts. Lacking a counter-factual, it is possible that had prices not risen, the changes seen would have been even better. On this evidence, however, the fear that a generation of infants have been blighted by the price spike can be set aside.

What might explain the difference in perspective from the hardship reported in the field surveys, and this contrary evidence? One explanation is the diversity of impacts. The food-price spike took place against a background of other economic shocks, such as rising costs of fuel and the early effects of the global financial crisis. But in some countries, economic growth was rapid – much faster in Africa by that time than had been seen for several decades. Another variable was the performance of their governments in providing public goods and services, and social protection. Given all these considerations, local experience could be highly diverse.

But something else may apply, as the Indian analysis indicates. The general equilibrium effects of higher prices may not be seen in the short run, but strong effects can emerge over a period of years, ranging from higher food prices to more jobs and higher wages in farming. When people are asked about food prices, they report the difficulties that this creates. Not all will readily realise that the same price rises may have seen them gain more employment with better wages.

Peering forward: future prices

Cereals prices are expected to fall by 5-15% in real terms by 2021 from their levels in the past two to three years, according to forecasts from FAO and the Organisation for Economic Co-operation and Development (OECD) as well as the US Department of Agriculture (USDA). Given that recent prices have been well above those seen in the mid-2000s, prices for 2021 are projected to be higher than those in 2005 by 18% for rice, 38% for wheat and no less than 88% for maize. These increases stem from the anticipated higher cost of oil, fertiliser and other inputs plus the steady growth in demand for grains for livestock feed – and possibly for biofuels – which explains why the forecast for versatile maize is so much more than that for rice, which is generally only used as a food.

Projections are, however, subject to significant uncertainties. To go by the record of predictions made over the past few decades, forecasting oil prices into the medium term verges on the impossible; yet these prices will have major effects on costs and probably on the demand for biofuels. Technical advances, also difficult to predict, may increase productivity in agriculture and push down prices, or else raise prices as they expand the scope for biofuels. Global warming will change climates and make them more variable, leading to less predictable harvests. Evolving diets in emerging economies will drive consumption of livestock and demand for feed grains, but nobody knows whether diets will come to ape those of the West or follow a more local norm.

It is not just price levels that will change. Food prices may become less stable. More variable weather is the obvious cause, but not the only one. Rising incomes make demand for staple foods less elastic, amplifying price rises in response to supply shocks. Biofuel mandates also reduce flexibility of demand. On the other hand, increasing integration of markets across regions will tend to reduce the overall variance in cereal harvests.

In addition, shocks, unpredictable in their timing by their very nature, will range from those that seem likely, such as harvest failures, to those that can only be imagined, such as wars, pandemics, and serious outbreaks of crop pests and diseases.

Policy implications: three key questions

Can international grains markets be made more stable?

The cereals-price spike of 2007–2008 provoked reassessment of the conventional wisdom that public interventions to stabilise prices were likely to achieve little at high cost. By and large, the debates have resulted in a stand-off between those who see only modest reforms as possible and those who lament that a system they see as broken is not finally being reformed.[2] Their proposals, however, have been contested. Increased ***public stocks of cereals*** would stabilise prices, but their governance would be difficult, private trading may divert its attention to second-guessing the public stock managers, and some see the costs as too high – a 70 million tonne public facility, for example, might cost more than $1 billion a year to operate.[3]

Diversion of grains from animal feed and industrial use to food at times when spikes threaten sounds attractive: just 10% shifted at critical moments would probably be effective. At the international level, however, the coordination and governance of such a scheme would be next to impossible. Therefore, only sovereign states could consider this and even then it would only be an option where substantial amounts of grain go to livestock and industry, that is, in middle-income countries, and likely difficult to achieve without concurrent trade measures (Locke et al., 2013).

Calls for regulation of ***index investment*** on futures markets for grain – if only on the precautionary principle – has seen the US introduce some controls on trading on commodities exchanges, although there seems little appetite among governments in general for more.

There is agreement on other issues, but little action.

Relaxing biofuel mandates at times of stress would help, as long as returns to biofuels are not financially attractive (Locke et al., 2013). Policy-makers so far seem less convinced, to judge from the US, which did not relax such mandates when the worst drought in living memory hit farms in the Midwest in 2012. ***Disciplines on export restrictions*** would help, yet there seems to be no credible way to obtain such commitments from grain exporters.

What then has been agreed or is still on the table? Having more accurate and detailed ***information on the state of food markets*** publicly available should benefit almost everyone, from international organisations to governments to private traders. FAO has, therefore, been mandated to set up an improved ***Agricultural Market Information System (AMIS)***, which it is currently developing.

Accelerating agricultural growth rates, especially in LICs vulnerable to spikes, would ease pressure on markets. Substantial funds have been committed internationally and most of them disbursed. Some national governments have been equally active. Higher prices, of course, have motivated farmers and agribusiness to invest more in agriculture.

Some calls have been made to moderate rising demand for grains, other than from biofuels, by reducing the amount of ***food that is wasted*** – thought mainly to be wasted by consumers in OECD countries, and between field and market in the developing world. Concrete proposals for reductions in waste, however, are awaited.

What do we need to know to reduce uncertainty and shocks?

With much uncertainty over potential shocks in the future, as well as trends for cereals prices, we need better information and a greater understanding of parts of the system. More information on ***stocks of cereals***, hopefully addressed by the AMIS initiative now underway at FAO, may alert traders and governments to threats of spikes. ***Oil prices*** affect the cost of production of cereals directly, but when high – over $100 a barrel – biofuels produced from tropical feedstock should be cheaper than fossil-fuel alternatives. Current uncertainty over oil prices and public policy and the costs of switching transport fleet fuel restrain biofuel development: all of these may change and, therefore, need monitoring.

Diets in the developing world may adopt the high consumption of animal produce seen in the West, or may evolve towards healthier patterns – with major implications for health and demand for feed grain. Changing consumer preferences and the public policies that affect those preferences need monitoring.

Agriculture needs to adapt to ***climate change, help mitigate such change and become more environmentally sustainable***. Policy-makers will, therefore, need better information on environmental changes, technical advances to facilitate a greener agriculture, and changes taking place within farming systems.

How can the poor and vulnerable be protected?

The biggest surprise from this review is the stark differences in assessments of the distress provoked by the 2007–2008 price spike. Clearly this needs more understanding. Information on prices and the proximate causes of changes exists; but the factors that translate these to outcomes in incomes, poverty and nutrition are not monitored as closely as they should be. The largest data gap concerns changes in employment and wages in rural areas.

Data aside, what practical action can be taken? The food-price spike has challenged the conventional wisdom that domestic price stabilisation is costly, difficult and likely to be either ineffective or counter-productive. Given volatility on world markets, a case can be made for additional, precautionary domestic measures to guard against such events. Southeast Asia has had some success. Countries such as Indonesia and Thailand have been able to dampen the volatility of cereals prices by public control of as little as 5% of the total volume of grain (Dawe and Timmer, 2012): leaving most trading in private hands and thereby avoiding the rigidities and costs often seen with heavy public intervention in markets. These measures, however, require capacity and funds that few LICs have. Success, furthermore, is far from certain: those two countries got it right, neighbouring India and the Philippines did not.

When, as applies in most LICs, it is difficult to prevent the transmission of international volatility to domestic markets, what can be done to protect the vulnerable? Two perspectives emerge from this review. One seeks to compensate the poor directly through humanitarian assistance and social protection. A large literature exists on how best to do this. The price spike reminded us that schemes have to be in place already that can be expanded, adapted and deepened to accommodate increased needs or larger numbers in need. It is more or less impossible to create functioning systems within the weeks and months of a price spike. Even then, however, the majority of vulnerable households did not benefit from social protection: they coped by their own means.

The other view takes a wider and slightly longer-run view. It is now clear that for those who were fortunate enough to live in a thriving economy with reasonably broad-based growth and a competent government, the price spike may have been unwelcome but was hardly a disaster. Therefore, growth and development matter for resilience.

More specifically, LICs have highly restricted options for protecting their populations from food-price spikes. They need, therefore, to take full advantage of opportunities. Given that many LICs have under-used land and labour, stimulating domestic food production is likely to be one of the more effective responses.

Those unfortunate to be living in slow-growing LICs without able governments need support to build resilience at household and community level – where most coping has taken place. This support will vary by circumstances, but potential foci for action include security; respect for

the rights of local people to land, water, grazing and forests; provision of key services such as health care; and providing passable road access. These measures, of course, are needed in any case for broader development.

Turning old problems into opportunities: the return of agriculture and nutrition

Action on two longstanding issues has been galvanised by the price spike: ***disappointing rates of agricultural growth***, especially in sub-Saharan Africa; and ***child malnutrition***. Since 2008, initiatives have surged in these areas. Leaders, it seems, have realised that it need not be difficult to raise food production or improve child nutrition. Many of the necessary actions, such as agricultural research, infrastructure in rural areas, clean water and primary health care, are well-known and proven: they need only funding and political backing. What is more, very recent evidence on increased food production and progress on reducing child malnutrition since 2008 suggests opportunities are being seized.

These welcome developments remind us that when determined action is taken, changes can be made, even in areas previously seen as 'difficult'. They were only 'difficult', it would appear, because they got too little political support and investment.

Written by Steve Wiggins, ODI Research Fellow (s.wiggins@odi.org.uk) and Sharada Keats, Research Officer (s.keats@odi.org.uk). This ODI Briefing is based on the ODI Shockwatch Report *Looking back peering forward: food prices and the food price spike of 2007–08*, Steve Wiggins and Sharada Keats, March 2013 (http://bit.ly/bpswsk1).

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Endnotes

1 Indeed the argument can be turned around. In 2012 the world's dominant maize exporter suffered a catastrophic drought, but this added only 25% to the price of maize, compared to a 139% increase from September 2006 to June 2008. This suggests that the system is reasonably resilient to single shocks.

2 Abbott (2011) reviews the evidence to arrive at the former position, while Clapp and Murphy (2013) lament the lack of deeper reform.

3 In the two years preceding the price spike of 2007–2008 global grains use exceeded harvests by around 70 million tonnes. Storage can cost as little at $15 a tonne, including allowance for losses, in cool, dry conditions.

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Overseas Development Institute
203 Blackfriars Road
London SE1 8NJ

Tel +44 (0)20 7922 0300
Fax +44 (0)20 7922 0399

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