



Policy options to address price volatility and high prices

Before considering interventions to reduce and manage domestic price volatility, it must be recognized that some price volatility is an inherent characteristic of agricultural commodity markets. In the short term, because there is a mismatch between timing of supply (which is seasonal) and timing of demand (which is much less seasonal), agricultural commodities must be stored, and storage will not be profitable unless prices vary during the course of the year. Over the longer term, if the increase in food production is not keeping pace with demand growth, it is important that prices increase. This will provide incentives for farmers to increase supply and for the private sector to increase research and development, and will provide signals for the public sector to increase spending on public goods that support agricultural production and markets.

Broadly speaking, interventions to reduce the costs associated with price volatility can be divided into two types. First, there are interventions that reduce price volatility, such as improving market information (Box 7). Second, there are interventions that accept price volatility as given and attempt to cope with it. These coping mechanisms can be either before (*ex ante*) or after (*ex post*) the fact. Further, the interventions can occur at either the international or the domestic level, and can be implemented by either the public or the private sector. Some interventions fit into more than one of these categories. Use of domestic buffer stocks and trade controls, for example, accept international price volatility as given and try to cope with it after the fact. But, at the domestic level, these interventions also try to reduce domestic price volatility.

BOX 7

Improving market information systems to reduce price volatility

Information on the current situation and outlook for global agriculture shapes expectations about future prices and allows markets to function more efficiently.

Conversely, lack of accurate information on market fundamentals may reduce efficiency and accentuate price movements. Better information and analysis of global and local markets and improved transparency could reduce the incidence and magnitude of panic-driven price surges.

Recent events have revealed weaknesses in the capacity of nations and international organizations to produce consistent, accurate and timely agricultural market data and analysis, especially in response to weather shocks such as floods or droughts. Action is needed to increase capacity to undertake more frequent and systematic monitoring of the state of crops and to develop

mechanisms for improved short-run production forecasts that are able to translate crop growth, meteorological and remote sensing data into yield and production expectations. Greater use could be made of satellite data and geographic information systems and, in this context, international coordination and exchange of technologies and information could be enhanced.

Information on food stocks is an essential component of a global food market information system, yet reliable data on stocks of grains and oilseeds are often not collected or, if collected, are not reported publicly. The reasons for the lack of good stock data are multiple: some countries no longer hold public stocks because the policy measures that created them have been removed or reformed; stocks can be very dispersed among farmers,

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traders and other actors and hence difficult to track; and some information on stocks is commercially or politically sensitive. Generally, international agencies estimate net changes in stocks from data on production, consumption and trade. As a result, it is not possible to have complete confidence in world food stock estimates. International cooperation could redress this situation and ensure that reliable information on global stocks becomes widely available. This would, in turn, better inform market participants and help avoid panic-induced price surges resulting from misinformation.

Monitoring food prices, on both cash and futures markets, is another essential component of a food market monitoring system. Assessing changes in oil prices and analysing their impact on food markets is also important. Better information about domestic price movements is necessary to understand how international price changes affect domestic markets in developing countries. Such information is important for early warning systems, such as the FAO Global Information and Early Warning System and WFP's Vulnerability Analysis and Mapping Unit. It is also crucial for policy-making and designing effective risk management instruments for developing countries.

For developing countries, enhanced market information and early warning systems would enable both governments and the private sector to plan ahead. Governments would be able to assess needs more accurately, make budgetary provision for producer and consumer safety nets and better position emergency food-security reserves. Improved market information and analysis could reduce uncertainties and help producers, traders and consumers to make better decisions.

Over the last decade a great deal of baseline information on food security vulnerability has been developed. WFP support to national food-security monitoring systems already provides a monitoring and decision-support tool to

help governments manage and respond to risk related to price, weather or other hazards. At a regional level, a few successful efforts, such as the Famine Early Warning System Network, have increased the availability of information to governments and market participants. The reliability and timeliness of such early warning systems need to be improved, and capacity to develop and utilize them should be strengthened at both the national and the regional levels. The focus should be on countries that are particularly vulnerable to price shocks and food emergencies.

The experience of the 2006–08 food price crisis and the current high price volatility in many international food markets have exposed weaknesses in relation not only to the provision of market information at the global level but also to the coordination of policy responses to food price volatility. There is a need to ensure better preparedness and more rapid and consistent policy responses in times of crisis. Building on and complementing existing systems, improvements in global market information and policy guidance could be achieved through a collaborative food information and policy initiative currently being discussed by a number of international organizations: the Agricultural Market Information System (AMIS). Such an initiative would improve data reliability, timeliness and frequency, as well as enhance policy coordination in times of crisis.

AMIS could be built on the model of the Joint Oil Data Initiative, launched in 2000 to improve information about oil markets. However, it would have the additional functions of issuing global food price surge alerts and promoting policy coherence. AMIS would involve the major food producing, exporting and importing countries. It would also involve a secretariat composed of international organizations with the capacity to collect, analyse and disseminate information on a regular basis regarding the food situation and outlook as well as to develop food policies.

There are some basic principles that should be considered when designing interventions. First, although it is difficult to quantify the costs and benefits of various policies, it is important that interventions be designed with cost-effectiveness in mind whenever possible. This is important to ensure that public funds are available for critical investments in agricultural research, roads, education and health.

Second, it must be recognized that the private sector will play a critical and dominant role in an efficient marketing system, defined as one that provides higher prices for farmers and lower prices for consumers. There are no examples of efficient marketing systems for food commodities that are dominated by the public sector.

Third, while government intervention into food markets will likely continue into the future, these interventions should

become more predictable and take into account their impact on the behaviour of the private sector. Erratic government interventions not only raise costs for the private sector, impeding its development, but also often increase price volatility. There are several examples of government interventions that have discouraged the private sector from arranging imports and resulted in a surge in domestic prices.⁶⁴

Fourth, aside from the general principles listed above, it must be recognized that each country is unique in many respects. In order to take account of different situations, each country should analyse its own circumstances and engage in policies appropriate to those circumstances. Country-specific experimentation along these lines should be encouraged.



Preventing domestic price volatility in the short term: trade policies and buffer stocks

Key message

Government policies that are more predictable and that promote participation by the private sector in trade will generally decrease price volatility. More predictability for private traders will decrease risk, leading to narrower margins, lower prices for consumers and higher prices for farmers.

Reducing domestic price volatility has historically been a concern for many countries, both developed and developing. In order to achieve their objectives, developing countries have typically used a combination of trade controls and buffer stocks.

As noted earlier, price volatility may originate from either domestic or international markets. Thus, a comprehensive policy on volatility cannot focus on international price shocks to the exclusion of domestic supply disruptions. In general, trade is the most cost-effective way to stabilize domestic prices in the face of shocks to domestic supply. For trade to be most effective, however, a solid market information system is of prime importance, so that imports can be arranged (whether by the government or the private sector) in a timely fashion. If there will be significant lags in the arrival of imports or access to emergency humanitarian reserves, buffer stocks may have a role to play.

In the case of shocks emanating from world markets, countries have two basic choices (or combinations thereof):

- Accept the price volatility and cope with it through a combination of risk management instruments and safety nets.
- Use a combination of trade controls and buffer stocks to reduce price transmission from international markets.

Both of these options have costs. The costs of price volatility were described earlier in 'Costs and benefits of volatile and unpredictable prices', and can be substantial. On the other hand, buffer stocks and trade controls also have costs. For example, the interest costs of buffer stocks can be significant. Furthermore, maintaining a buffer stock at a given level may involve trading twice that volume annually in order to maintain stock quality. These trades represent significant transaction costs (or quality deterioration if the trades are not carried out). Government interventions to stabilize domestic prices increase world price volatility and hurt poorer and smaller countries that are heavily reliant on food imports. If trade controls reduce domestic prices, supply response will be lower than it otherwise

would have been. This can create serious problems if the controls are sustained over time, because most observers expect higher world food prices in the future, in which case the world will need additional supplies.⁶⁵

On balance, it is not easy to quantify whether the costs of price volatility are greater or less than the costs of interventions to prevent it, and the answer will surely be situation-specific. It is possible, however, to offer some guidelines, informed by both historical experience and theory, that would help to lower the costs of government interventions.

Some rice-producing Asian countries have relied on a combination of international trade, buffer stocks, import or export monopolies and domestic procurement to stabilize prices. These measures were often successful in achieving their objectives and, in some cases, may have stimulated economic growth as well (see Box 8). In Africa, the experience with stabilization of the maize market has been less successful, as interventions have often been unpredictable and less supportive of a strong role for the private sector in marketing activities. Private traders have had to deal with uncertainties surrounding many important factors, including:

- the issuance of import and export licences;
- the level of the tariff, and which groups of private traders might be exempt from it;
- the level of government imports and the price at which they will be sold;
- the enforcement of sanitary and phytosanitary regulations; and
- transport across national borders.

Taken together, these uncertainties raise market risk significantly, discourage the private investment that is essential for a well-functioning market and leave many economies unnecessarily prone to food shortages. Government policies must be relatively transparent and predictable if the private sector is to play its roles in moving supplies from surplus to deficit areas and in storing supplies between harvest and the lean season. Furthermore, they should also try to minimize costs as much as possible in order to make sure that agricultural budgets are used primarily for investments in research and other public goods that can provide long-term solutions to price volatility.

Many government policies on food trade seem to stem from a distrust of private traders. One key step that could be taken in many countries is the establishment of regular,

BOX 8

Rice price stabilization in Indonesia

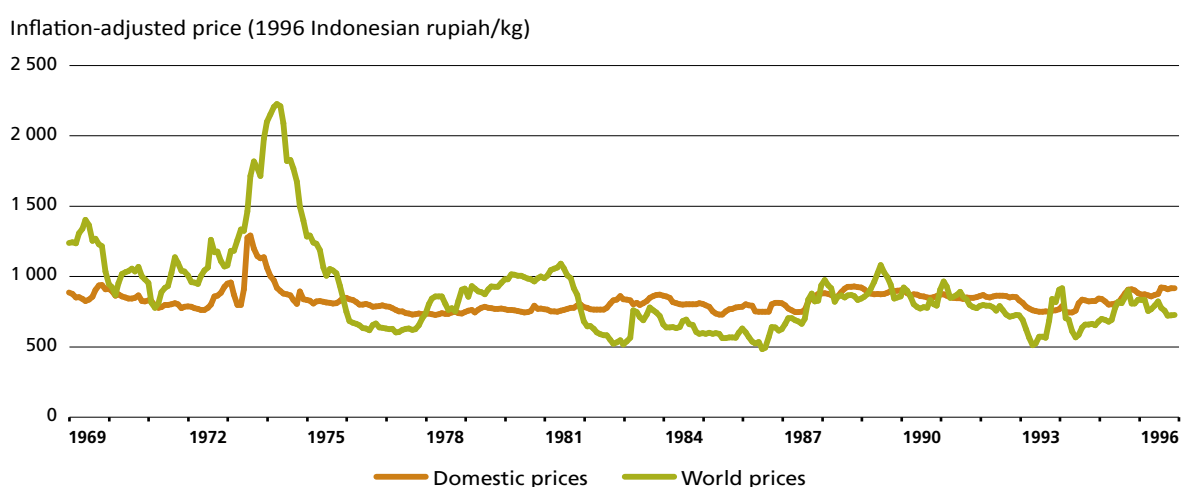
Indonesia successfully stabilized domestic rice prices for more than a quarter of a century from 1969 to 1996 (see graph below). During that period, domestic prices were roughly equal to world prices on average, but were substantially less volatile. Stabilization was achieved through a combination of international trade (usually imports, but occasionally exports) and buffer stocks that were procured and distributed depending on whether production was in surplus or deficit.¹ Although the amount of rice that the government bought varied from year to year with the size of the harvest, it was on average less than 5 percent of domestic production. In other words, the private sector was responsible for marketing 95 percent of the rice crop. Furthermore, nearly all of the government procurement was done through traders, not directly from farmers.

A floor price was announced every year before the main crop was planted, thus providing clear incentives to farmers to adopt new technologies. The level of the floor price that was announced took into account current inflation rates and was adjusted up or down slightly depending on world price movements, fertilizer prices and other factors. The level of the floor price, after adjusting for inflation, was relatively stable over time, providing stable long-term incentives for investment in rice production. The overall benefits of the rice price stabilization programme were substantial, although the benefits fell over time as the importance of rice to the economy declined with economic growth.²

¹ C.P. Timmer. 1996. Does BULOG stabilize rice prices in Indonesia? Should it try? *Bulletin of Indonesian Economic Studies*, 32: 45–74.

² C.P. Timmer. 2002. Agriculture and economic growth. In B. Gardner and G. Rausser, eds. *Handbook of agricultural economics*. Vol. IIA, pp. 1487–1546. Amsterdam, North-Holland.

Indonesia managed to stabilize its domestic price for rice from 1969 to 1996 through trade and buffer stocks



Sources of raw data: Indonesian Bureau of Logistics (BULOG); International Monetary Fund.

formal, open lines of communication between the government and the private sector. These could increase transparency and might help to avoid crises by providing advanced warning of impending problems that might harm the food security of the poor.⁶⁶

International trade has a key role to play in reducing domestic price volatility, but the fact that World Trade Organization rules on export barriers are much weaker than those on import barriers is a severe obstacle to increasing trust in international markets. Indeed, export restrictions have exacerbated price

volatility on international markets in recent years (see Box 9). Net food importers need much stronger guarantees from their trading partners if they are to rely on international trade as a source of food. A 'first best option' would be a ban on export restrictions, with countries addressing domestic food security issues through direct and targeted support. However, it is unlikely that a ban on export restrictions would be agreed or, even if agreed, would be enforced during a food crisis. On the other hand, reinforced rules, in particular in terms of transparency, are both possible and useful.

BOX 9

The world rice crisis

Price volatility on international markets can sometimes be caused by domestic market intervention policies – the world rice crisis of 2007/08 provides a good case study in this regard.

The rice crisis was not caused by any problems in the basic balance between production and consumption. First, rice production kept pace with increases in demand in the years before the crisis, and there were no major supply shocks in 2007/08. Indeed, global rice production reached new record highs for four straight years starting in 2005. Second, reflecting the good production outcomes, the stock-to-use ratio remained roughly constant in the three years before the crisis – there was no drawdown that would have made the market vulnerable to small disruptions in production. Third, despite some concerns that exporters did not want to sell (perhaps in anticipation that prices would continue to rise), there were supplies available on international markets for importers – the volume of exports in the first four months of 2008 was about 20 percent higher than in the same period in 2007.

While fundamentals in the rice market were sound, those for other food commodities did point to higher prices. Increased demand for biofuel from maize and oilseeds, and a nearly 4 percent decline in global wheat production in 2006/07 (including a severe drought in Australia, a leading wheat exporter), led to higher prices in those markets. Higher prices for maize and wheat probably led some consumers to shift from wheat to rice, which would have placed some upward pressure on rice prices. However, the size of the rice price increase went well beyond what could be explained on the basis of such substitution – it was ultimately government policies that led to the crisis. Indeed, the price hike was faster and stronger for rice than for cereals with less favourable market conditions.

In addition to higher maize and wheat prices, rising oil prices and a weak US dollar also contributed to higher commodity prices in general. These factors created concern in some countries that rice prices might increase as well. Indeed, rice prices had been rising since 2003, but the price increase during that time was relatively slow and steady (and thus easy to manage). Beginning in October 2007, however, government policies in a number of countries caused prices to increase rapidly. Large

producers of rice restricted supplies to the world market in order to avoid shortages for their own consumers, either completely banning exports or announcing increasingly high minimum export prices. Governments of rice-importing countries scrambled for supplies to stabilize their own markets, often buying very large quantities and paying above market prices. Others announced plans to build up stocks during the crisis, further driving up demand. As a result of these policies, prices on world markets tripled between October 2007 and April 2008. Even during the world food crisis of 1973–75, world rice prices had never doubled within six months, much less tripled.

While trade restrictions allowed some countries to prevent transmission of the price surge on world markets to their domestic prices, domestic stability was achieved at the cost of destabilizing the world market. It is very likely that the rice crisis would not have occurred if these measures had not been taken. Thus, one lesson from the rice price crisis is that disciplines of the World Trade Organization need to be strengthened so that export restrictions are used less frequently. Enforcement of any such disciplines might, however, be difficult, as noted earlier.

Making trade restrictions less harmful offers an additional approach to stabilizing the world rice market. An important step in this direction would be to make government policies more predictable. While many governments understandably want to maintain some flexibility in response to sudden unforeseen events, some policy changes could be avoided. Others might be implemented according to pre-announced schedules or criteria that determine when changes are phased in automatically in response to external events; this would make price changes more predictable.

The rice price crisis also demonstrates the need to strengthen the role of the private sector in carrying out trade, even if governments determine when trade takes place. Private-sector traders are unlikely to pay above-market prices, and their smaller trade volumes are less likely to move the market. Expanding the role of the private sector is particularly important for the world rice market, which is smaller than other world cereal markets and can thus be influenced more easily by large operations of governments.



Coping with likely future price volatility: risk management for smallholder farmers and governments

Key message

Agricultural research and cost-effective irrigation are urgently needed in order to reduce the production risk facing farmers, especially smallholders. These types of investments will reduce price volatility and will also lower production costs per tonne, which will reduce food prices.

Farmers face both production risks and price risks. A prudent risk-management strategy must consider both sources of risk, especially since one type of risk can offset the other in some circumstances (e.g. a domestic supply shock can lead to higher prices, so that reduced production is compensated for by higher prices).

Adverse weather and pests and diseases reduce farm income and result in more variable production. Climate change will likely increase these types of risk in the future. Many technologies, such as the introduction of disease- or stress-resistant varieties or the construction of irrigation and drainage systems, can reduce the risk to which farmers are exposed. For example, submergence-tolerant rice is spreading rapidly in parts of Asia where floods are frequent. Another promising way to reduce the risk facing farmers is through the use of improved small-scale storage technologies that smallholder farmers and consumers can afford.⁶⁷ Such technologies would reduce post-harvest losses and also provide a buffer against price shocks that might reduce the potential for panic-driven surges in demand. Such technologies are the most important way to reduce the risk facing farmers and countries, and should be strongly supported by both national governments and donors.

Market-based insurance mechanisms provide another way to transfer risk and assist farmers in making production decisions. It must be recognized, however, that any commercially viable insurance when offered as a standalone product will lower the average level of farm income in the short term, as a private insurance company will not offer a product if it consistently pays out more than it receives. Over the longer term, however, the reduced risk faced by farmers can encourage them to invest in more-profitable

technologies that raise their productivity and income. For example, insurance when bundled with credit, inputs, and other services can allow households to take prudent risks knowing they will be protected if there is a disaster. Governments can (and often do) provide subsidies for insurance, but these programmes have typically been very expensive to operate, even in developed countries. Subsidies to such programmes need to be balanced against the costs and benefits of expenditures on agricultural research and irrigation.

Considerable effort and research are being invested in developing ways to address the challenges of insuring smallholders against production risks. One such innovation is weather-index-based crop insurance. This pays out to farmers whenever particular weather factors – rainfall or temperature, for example – cross specific thresholds at which they are likely to cause a significant fall in crop yields. These factors are measured by weather stations or even satellite technology. The advantage of this approach is that insurers do not need to make field-level assessments, which reduces administrative costs. In addition, farmers who have such insurance do not have incentives to mismanage their crop (a problem known as moral hazard) in order to receive a payout, since the payout is based on an external measurement rather than crop yield.

However, weather-index-based insurance requires a number of conditions to be in place. First, the index chosen must be strongly correlated with local yields, or else farmers are not insuring themselves against the relevant risk (this is known as basis risk). Second, there must be adequate infrastructure, such as a network of local weather stations and/or available remote-sensing options, reliable historical data and an adequate legal and regulatory environment. Third, farmers should have a clear understanding of how such insurance works and should be able to pay for it. Finally, for index insurance to be effective, it should be linked to other financial services as part of a larger package of risk management solutions.

The use of futures markets by smallholders in developing countries to manage price risk seems more problematic at present. Few developing countries have commodity exchanges where farmers and other market participants can

hedge against price fluctuations. Moreover, there are substantial fixed costs of participation in such markets in terms of knowledge and understanding, and it is less profitable for a farmer to acquire such knowledge if her or his farm is small. Even in the United States of America, only

3 percent of farms used futures contracts in 2008.⁶⁸ In general, it has proved extremely difficult to reach smallholders in a cost-effective manner.

Governments face risks similar to those faced by farmers, and some of the available instruments are similar as well.

BOX 10

What happens to the operations of the United Nations World Food Programme – the largest purchaser of food for humanitarian purposes – when food prices rise?

Rising food prices affect the World Food Programme (WFP) in two ways: they make it more expensive to purchase food for the existing programmes to feed the hungry and they increase the number of people needing food assistance.

The WFP business model is unique in the United Nations System. It is funded entirely through voluntary donations and receives no assessed contributions, core funding or membership dues. As a result, and because of its constitution, it is unable to hedge prices of commodities in the market place in the way that a large private-sector company might do.

Two factors are key drivers of WFP costs. The first is the prices of food commodities themselves. WFP procures its food commodities on spot markets. Thus, when the food price crisis struck in 2007 WFP was fully exposed to the effect of the increases. Every 10 percent increase in the cost of the WFP food commodity basket adds around US\$200 million to the cost of feeding existing beneficiaries.

The second cost driver is transportation, which is linked to fuel prices. Given the need for food to be transported to some of the most remote areas of the world, including air drops of food in the most difficult terrains, fuel prices are significant determinants of WFP costs.

Between June 2007 and February 2008 the cost of meeting the needs of WFP's existing client load increased by US\$775 million.

The next dimension is securing resources for the needs of those who have become newly dependent on food assistance as a result of food price rises in their locality. Between June 2007 and February 2008 WFP needed US\$186 million extra to expand interventions through schools to about 4.8 million beneficiaries in 11 countries, to distribute specialized foods to about 1.8 million malnourished children and pregnant and lactating women, extend public works programmes to over 4 million beneficiaries so that they could put food on the table and to introduce cash transfer and voucher programmes to about 800 000 people in seven countries to enable them to access available food in the marketplace.

Resource savings were achieved by changing commodities in some food baskets, for example by substituting sorghum

for maize in parts of Africa. Even so, the overall additional costs for WFP in 2008 were US\$920 million.

The final challenge that arose for WFP in 2007 and 2008 was the actual procurement of food. As food commodity markets tightened, WFP faced difficulties in actually securing food and getting it to the right place at the right time. On average, it takes 3–4 months between securing food commodities and delivering them to where they are needed. WFP procures food competitively and as close as possible to the place where it is needed, taking into account both the commodity cost and the transportation cost. In 2010 WFP bought 78 percent of the food it needed in developing countries. However, the challenge it faced was exacerbated by more than 30 nations imposing food export bans in an effort to protect their own consumers. While humanitarian exports are usually exempt from such bans, the process of negotiating with each government when WFP encountered the ban took valuable time.

How is WFP responding?

Prior to the food price crisis WFP was unable to procure food until it actually received a financial contribution from a donor. Following the 2008 food price crisis, WFP's Executive Board moved quickly to provide authority to pre-purchase and pre-position food for vulnerable populations once a financial commitment was made. A US\$60 million forward purchase facility was put in place to buy commodities and pay shipping costs prior to receipt of donor contributions.

WFP is now planning to expand this system to increase the level of forward planning and purchasing it undertakes to include pre-positioning of stocks for quick delivery to vulnerable people affected by food crises, supported by an expanded revolving financing facility of US\$150 million. Stocks will be located along up to eight major humanitarian corridors. This facility does not enable WFP to hedge either commodity price or exchange rate risk, but does allow it to shorten the time between food needs being identified, financial resources being obtained and food being delivered to those in need.

For example, weather-index-based insurance was first used at the national level in Ethiopia in 2006 and in Malawi in 2008 to manage production risks; it is still in operation. Given the technical nature of such market-based approaches to managing food price volatility, there is a need to establish institutions at the national level and build up technical expertise within those institutions.

The principal instruments that could be used to manage the price volatility of food imports are futures and options contracts. By buying futures contracts, a government that wishes to protect itself against a possible surge in the price of grain locks in a price agreed at the time the contract was concluded. Futures contracts give the country greater certainty of the price it will pay for the grain, but do not offer flexibility. Should the market price move lower, the government will still have to pay the agreed price, and hence pay more than it otherwise might have had to. In poor countries this can create considerable political

difficulty, in addition to the financial loss. In practice, futures may not be a useful instrument for governments since there is an unpredictable and potentially large liability associated with taking a futures position.

Call option contracts lock in a maximum price, but with no obligation to buy at that high price if market prices move lower. This is an attractive option if the goal is to protect a food-importing country against a price surge, because the country will still be able to benefit from lower prices after the agreement. Thus, a call option provides greater flexibility than a futures contract. However, this flexibility comes at a cost – call options are more expensive than futures contracts – and governments must be willing to pay the premium. Depending on the fiscal situation of the particular government, and their dependence on imports, some governments may decide to self-insure, paying high prices on occasion but avoiding the fees involved in purchasing call options year in and year out.



Coping with price volatility after the fact: targeted safety nets and emergency food reserves

Key message

In order to be effective at reducing the negative consequences of price volatility, targeted safety-net mechanisms must be designed in advance and in consultation with the most vulnerable people.

Surges in food prices and increases in the prices of inputs such as fertilizers reduce the incomes of poor and vulnerable households and put stress on family budgets. In response, households sell off assets, take children out of school or change their diets to include cheaper, less nutritious ingredients, all of which have consequences that last long after the price surge has receded. The long-lasting nature of such impacts provides both a humanitarian and an economic rationale for safety nets that mitigate the impact of the shock. School feeding programmes, for example, can help to prevent children from leaving school during a crisis, thus reducing the long-term impact of the price shock on human capital.

For poor consumers, scaling-up existing safety nets is a viable option in countries where these are already in place. This could be achieved by adding new beneficiaries, by increasing transfers made to current beneficiaries or both.

However, such safety nets require a lot of resources. This presents an obstacle, especially for low-income developing countries, which cannot afford such expenditures in times of crisis. Foreign support will have to be mobilized quickly to enable these countries to meet the increased demand on their budgets.

Another difficulty is that many countries do not already have safety-net mechanisms in place. It is of critical importance to design safety net mechanisms *ex ante*, even if funds are not sufficient to implement them at first. Having identified the vulnerable, particularly pregnant and lactating women and children under two years of age, the safety net or emergency food reserve could be activated as soon as a crisis hits, using funds from the international community. For example, a key component of many safety nets, particularly social cash transfers, is the delivery of cash to women, which can enhance their status in the community and within the household as well as resulting in better health and nutrition outcomes for children. But such interventions require careful planning if they are to be effective, not a rushed approach in response to a crisis. Planning ahead will lead to better outcomes.

If safety nets are provided in terms of food (as opposed to cash), emergency reserves will be needed before the food aid arrives, including specialized foods for children aged six

months to two years. These reserves should be well linked to effective information and early warning systems. They should be strategically located, taking into account trade-offs between increased monitoring costs when the reserve is too fragmented, the higher costs involved if it were stored entirely in food-deficit areas and the longer response time entailed if it were stored entirely in food-surplus areas. The size of the reserve should also be carefully determined. At a minimum, it should provide for 1–2 months of requirements, depending on how long it takes to replenish supplies; at most it should be enough to meet the food requirements of only the vulnerable, not to provide general subsidies to all.

Food reserve agencies should operate with well-defined rules and enjoy autonomy from the political process, similar to that of a central bank. When it is necessary to replenish reserves, the agency should purchase stocks in a way that does not increase uncertainty for private traders, who should handle the bulk of the crop. Food reserve agencies should also collaborate across borders in order to pool risks more efficiently. The recently expanded ASEAN (Association of Southeast Asian Nations) Plus Three emergency rice reserve is a promising development in this regard.

In cases where countries may not have the capacity to operate national emergency reserves, strategic food-reserve systems could be established at the regional level. In regions where food crises are likely to recur and transport infrastructure is weak, such emergency reserves can quickly provide food to the hungry. In 2008, WFP achieved rapid and cost-effective food delivery to beneficiaries across countries in the Eastern and Southern Africa region through a pilot forward purchase facility scheme implemented at a regional level. Any such regional system should provide the foundation for an eventual transition to national ownership and control.

Some nations that imposed export restrictions during 2008 and 2010 made exemptions for purchases of humanitarian food, including those by WFP. However, others have not made such exemptions, forcing humanitarian agencies to purchase food from more distant sources. Most exemptions, if made, are on a case-by-case basis after concern has been raised and the exemption requested. This results in loss of valuable emergency response time and resources, as procurement teams have to spend time negotiating for exemptions or finding alternative suppliers from other regions.

Many nations have agreed to commit to exempt humanitarian purchases from export bans, first at the G8 Summit in L'Aquila, Italy, in July 2009 and then at the World

Summit on Food Security in Rome in November 2009, where all FAO member states agreed to “remove food export restrictions or extraordinary taxes for food purchased for non-commercial humanitarian purposes, and to consult and notify in advance before imposing any such new restrictions”. This commitment was also made at the G20 Agriculture Ministers' Meeting in June 2011 (see Box 11). If honoured, these commitments would allow food to be shipped rapidly to where it is needed in an emergency.

While price surges will benefit farmers with a surplus to sell, producer safety nets may help protect the livelihoods of some smallholder farmers if there is a significant and rapid increase in the international price of fertilizers or other inputs. Higher prices for these inputs, coupled with the fact that inputs must be purchased several months before the harvest, may mean that farmers are forced to curtail their use, which could reduce yields and have negative effects on the livelihood of smallholders.

Targeted input support enhances the ability of smallholders to respond to the increase in food prices and contributes towards household and national food security. However, targeted input subsidies involve high costs, and such programmes are difficult to manage, especially during periods characterized by volatile food and input prices. For example, it is typically very difficult to make sure that fertilizer is delivered on time to farmers. Even if this problem is solved, political pressures for expansion of input support programmes may lead to an unsustainable fiscal burden that may hinder rather than promote long-run growth. Therefore, it is important that such programmes are temporary and target only those farmers that have no means to finance input purchases.⁶⁹

At the international level, it can be difficult for many poor countries to afford the higher import bills that come with food price spikes. During the recent price surge, a number of countries that experienced significant increases in their food and fertilizer import bills resorted to the International Monetary Fund's Exogenous Shock Facility (ESF). The ESF provides liquidity to mitigate the negative impact of exogenous shocks on developing countries' balance of payments, international reserves position and inflation. Such facilities could be expanded to enable a country to finance food imports when the need arises, rather than to compensate them for balance of payment losses after the fact. Mechanisms such as the World Bank's Global Food Crisis Response Programme, which is targeted at the poorest and most vulnerable countries, should be supported, as well as efforts for a broader crisis window under the International Development Association.

BOX 11

Outcomes of the G20 Agriculture Ministers' Meeting

On 23 June 2011, G20 Agriculture Ministers met to tackle the issue of food price volatility, with the ultimate objective to improve food security. They agreed on an "Action Plan on food price volatility and agriculture" that will be submitted to the G20 Leaders at their summit in November 2011. The discussions were based on an Inter-agency Report on Food Price Volatility prepared by FAO, OECD, IFAD, IMF, the United Nations Conference on Trade and Development (UNCTAD), WFP, the World Bank, the World Trade Organization (WTO), International Food Policy Research Institute (IFPRI), and the UN High-Level Task Force on Global Food Security. The effort of these ten international organizations was coordinated by FAO and OECD. The report put forward a number of concrete policy options aimed at reducing volatility and mitigating its negative effects on countries and the vulnerable.

The G20 Agriculture Ministers' Meeting adopted several recommendations put forward by the Inter-agency report. Among these recommendations are:

- 1. Agricultural production and productivity:** G20 governments committed to implementing a broad scope of actions to boost agricultural productivity growth, increase food production and strengthen the longer-term sustainability and resilience of the food and agriculture system, paying special attention to smallholders, especially women and young farmers. Such actions will include strengthening agricultural research and innovation and creating the enabling environment to encourage public and private investment in agriculture.
- 2. Market information and transparency:** G20 governments will launch the Agricultural Market Information System (AMIS) to increase collaboration among international organizations, major food exporting and importing countries and the private sector with the objective of providing accurate and transparent information. AMIS will be based on existing information mechanisms and will be housed in FAO.
- 3. International policy coordination:** G20 governments also called for the establishment of a Rapid Response Forum within AMIS to enhance international policy coordination. The Rapid Response Forum will discuss appropriate policy responses when the market situation indicates a high risk of food insecurity and will work closely with the Committee on World Food Security (CFS) to promote greater international policy convergence.
- 4. Reducing the effects of price volatility on the most vulnerable:** G20 Agriculture Ministers called upon multilateral development banks and international organizations to develop risk management tools and help mainstream risk management, in particular for smallholders, and to further explore counter-cyclical mechanisms for vulnerable countries in the event of external shocks, including food price surges. The Ministers also supported initiatives to maximize efficient delivery of food assistance and strengthen supply chains against price and supply shocks, in particular through forward-positioning networks and mainstreaming risk management in international food-assistance procurement. The G20 also agreed to remove export restrictions and extraordinary taxes for food purchased for non-commercial humanitarian purposes by WFP, and agreed not to impose them in the future.
- 5. Financial regulation:** G20 Agriculture Ministers strongly encouraged G20 Finance Ministers to take the appropriate decisions for better regulation and supervision of agricultural futures and derivative markets.



Preventing price volatility in the long term: increasing the productivity, sustainability and resilience of agriculture

Key message

Investment in agriculture will improve the competitiveness of domestic production, increase farmers' profits and make food more affordable for the poor. Private investment will form the bulk of this investment, but public investment has a catalytic role to play in supplying public goods that the private sector will not provide. These investments should consider the rights of existing users of land and related natural resources, benefit local communities, promote food security and not cause undue harm to the environment.

The global agriculture sector faces significant challenges in the coming four decades. Continued population growth will drive up food demand, while climate change and natural resource degradation will create challenges on the supply side, both in terms of average production and in terms of production volatility. FAO estimates indicate that global agricultural production will need to grow by 70 percent between 2005–07 and 2050, and by almost 100 percent in developing countries, to feed a population of more than 9 billion people in 2050. Insufficient growth in production will lead to higher and more volatile prices.

It is important to note that increased production at the farm level is not the only way to increase supplies and meet demand. FAO recently estimated that 1.3 billion tonnes of food are lost or wasted globally each year. Most of the waste is in developed countries and most of the losses are in developing countries. The challenge is to find cost-effective ways to reduce such waste and losses. Thus, research and investment in improved post-harvest management and logistics will be an important component of a broader agricultural development strategy.

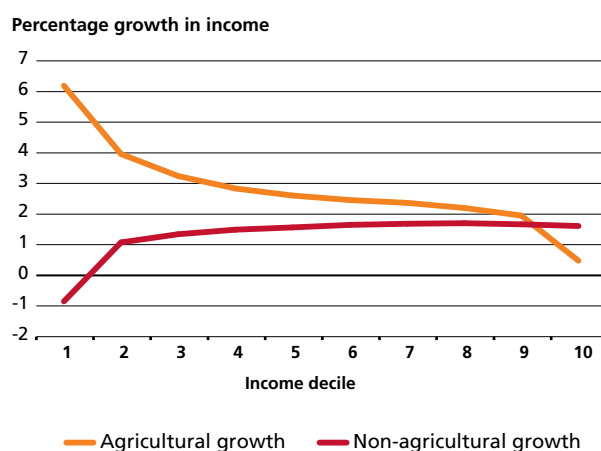
Investment to create a more productive and efficient agriculture sector will make food more affordable for the poor and reduce price volatility as well. In addition, there is clear demand for such investment from the rural poor themselves. According to Gallup polls in sub-Saharan Africa, people think that agriculture is the most important issue for their governments to address, and they rank reducing

poverty and hunger as the two most important of the Millennium Development Goals.⁷⁰ Increased investment will lead to more rapid agricultural growth, which has been shown to have a greater positive impact on the income of the poor than growth from outside agriculture (Figure 17).⁷¹ Greater income for the poor will make households less vulnerable to economic shocks such as price fluctuations and reduce the danger of poverty traps.

There are encouraging signs that agricultural capital stocks – buildings, equipment, livestock and the like – may be starting to increase. Agricultural capital per worker was largely stagnant in low- and middle-income countries from the middle of the 1980s to the early part of the 2000s, but increased in 2004 and 2005, the most recent years for which data are available.⁷² These increases need to be sustained over long periods of time: doubling the agricultural output of developing countries will require an average annual gross investment of US\$209 billion (in 2009 US dollars), roughly

FIGURE 17

An increase in agricultural growth has a stronger, more positive impact on the income of the poor than does an equivalent increase in non-agricultural growth



Note: Income decile 1 refers to the poorest 10 percent of the population, and so on. Expenditure is used as a proxy for income, as is common in analysis of household survey data. Source: E. Ligon and E. Sadoulet. 2007. *Estimating the effects of aggregate agricultural growth on the distribution of expenditures*. Background paper for the *World Development Report 2008* (available at http://siteresources.worldbank.org/INTWDR2008/Resources/2795087-1191427986785/LigonE&SadouletE_EstimatingEffectsOfAggAgGr.pdf).

50 percent more than current levels.⁷³ This total includes investment needed in primary agriculture and necessary downstream services such as storage and processing facilities, but does not include public goods such as roads, large-scale irrigation projects and electrification that are also needed. Delivering investment on this scale is a formidable challenge, but one that must be met if the world is to eliminate hunger.

Most of the investment, both in primary agriculture and downstream sectors, will have to come from private sources. Farmers themselves must purchase implements and machinery, make investments to improve soil fertility and acquire knowledge to improve the management of their farms. Private-sector investment also needs to be encouraged at all stages in the value chain – upstream of the farm, in seed and fertilizer production and distribution, and downstream, in processing, marketing and distribution.

Farmers and prospective farmers will invest in agriculture only if their investments are profitable, however, and this requires an appropriate policy and regulatory environment as well as investment in a wide range of public goods. Three types of public investment are critical:

- direct investment in agricultural research and development to increase productivity and to enhance the ability of agricultural systems, especially smallholder farms, to cope with climate change and resource scarcity;
- investments to link the primary agriculture sector with the sources of demand, including agricultural institutions, extension services, rural roads, ports, power, storage and irrigation systems; and
- non-agricultural investment to enhance the rural institutional environment and improve human well-being; such investments include education, particularly of women, sanitation and clean water supply, and health care.

All of these investments have been shown to have consistently high rates of return, both in financial terms and in terms of reducing poverty.⁷⁴ Investment to increase the productivity and resilience of developing country agriculture can contribute to improving food security in multiple ways. It can reduce food price volatility through increased productivity and improved technical management of production and of risk, especially in the face of climate change. It can help farmers and households to cope better with the effects of volatility once it occurs. It can also make food more affordable for poor consumers and increase the

incomes of poor farmers. These investments will be more effective at reducing poverty if they are appropriate for small-scale farmers, who will account for a substantial share of production in developing countries for the foreseeable future.

Much public research is carried out by the international research centres of the Consultative Group on International Agricultural Research (CGIAR), although public research institutes in countries such as Brazil, China and India are providing an increasing share of public goods in the area of agricultural research. A new multi-donor trust fund, the CGIAR Fund, has been established to harmonize donor investments in key global challenges on agriculture and is being hosted and managed by the World Bank. New results-oriented research programmes focus on policies and technologies to mitigate climate change and adapt to its effects; these include a broad group of partners. There is a need to increase and sustain the financing of such bodies in order that they may continue to invest today in the techniques and innovations that will be needed to deal with the food security and climate challenges that will be faced in the future.

Increasing public investment in transport and productive infrastructure, as well as in human capital, is also central to stimulating productivity and reducing post-harvest wastage. Improvements to infrastructure, in particular rural roads, irrigation and market facilities such as warehouses, cold storage facilities and market-information systems, will reduce transport costs, integrate smallholders into markets and reduce price volatility. Improvements to extension, education and health are also key elements of a sound policy approach to increasing the productivity and enhancing the food security and the well-being of farmers and consumers.

These types of investment in human capital, infrastructure and science are very basic, but they are nevertheless essential to enable the poor to lift themselves out of poverty. It is hard to imagine that food insecurity will be eradicated if they are not made. We have made progress in alleviating poverty and food insecurity and can do more if we build on sound analysis, good science and adequate funding for appropriate interventions. This will require the commitment of the entire international community to raising the profile of agriculture, not just for the next year or two but ultimately until everyone, at all times, has physical, social and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life.