AMIS

Agricultural Market Information System

ENHANCING MARKET TRANSPARENCY

Contents

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Foreword

Markets are vital to agriculture and agriculture is vital to food security. The orderly functioning of markets is critical for food security from national and global perspectives. Because of plentiful supplies, reliance on international markets for food procurement has long been taken for granted. However, a rapid transformation of the food sector in recent years has generated high and volatile international prices and has strained capacity of the international food markets. This has complicated the policy choices for decision makers pursuing food security strategies. There is a compelling need for well-functioning international markets and the role of timely information and transparency with regard to food markets is critical.

To meet the rising demand for food, animal feed and increasingly biofuels over the past few years, more crops are being grown in those regions that are prone to unstable weather and erratic yields: a factor which explains the large discrepancy between production forecasts and final harvested figures in recent years. Evidently, less accurate production forecasts makes markets vulnerable to supply shocks and hence reduces market stability. Moreover, with inventories in major exporting countries much below their levels of previous decades, and more generally, a lack of reliable statistics on the level of stocks other than for a few traditional exporters the importance of accurate as well as up-to-date supply-and-demand statistics for major traded food commodities has never been greater. Market instability as manifested by sharp price swings, or volatility, is exacerbated by a lack of accurate information on the international supply and demand situation. Increasing information on global markets and enhancing transparency will reduce the incidence of panic-driven price surges of the kind seen in recent years. It should also permit better informed and coordinated policy decision-making to prevent the responses which can make international prices even more volatile.

This is the background against which the Agricultural Market Information System (AMIS) was established. This first, interim report introduces AMIS to a wide audience. It presents the rationale and process leading to the establishment of AMIS and illustrates the types of outputs that AMIS intends to provide in the coming months and years. It begins with two briefs, produced by the newly formed AMIS Secretariat (which is composed of nine international organizations). The first brief describes the mandate given to the international organizations by the Seoul Summit in November 2010 and summarizes their recommendations in response to it. The second explains the background to the setting up of AMIS and summarizes the outcome of the Inception Meeting, which launched AMIS in September 2011. This is followed by three short articles covering futures markets indicators, a review of cereal prices in domestic markets in the context of the spikes in the world market, and national policy responses to the price rises. These are the types of issues on which AMIS will be paying particular attention as it further develops its capacity to monitor, analyze and interpret market and policy developments.

AMIS, as with any other information system, will need time to mature. The AMIS Secretariat has done its best to expedite the process under the Chairmanship of France, the current President of G-20. An AMIS Web site is also near completion. It will be the core platform for all AMIS-related activities, and will be fully in the public domain. The Web site will facilitate up-to-date data extraction of information, collated from multiple sources, on selected agricultural commodities. It will also permit the participating member countries to input data and market information on their respective countries in a secure domain. AMIS will also convene meetings of technical experts to define, refine and develop quantitative indicators that will improve forecasting of price behavior. Ultimately, the success of AMIS will depend on close and continuing collaboration among all its members.

AMIS Secretariat
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Improving global governance for food security - The role of the international organizations

Context

G20[1] leaders, meeting at their Seoul Summit in November 2010, requested FAO, IFAD, IMF, OECD, UNCTAD, WFP, the World Bank and the WTO to work with key stakeholders "to develop options for G20 consideration on how to better mitigate and manage the risks associated with the price volatility of food and other agriculture commodities, without distorting market behaviour, ultimately to protect the most vulnerable." This mandate was part of a comprehensive Multi-Year Action Plan for Development, of which food security was one theme among several including infrastructure, human resource development, trade, private investment and job creation, and growth with resilience.

The initial group was quickly completed by the UN High-Level Task Force on the Global Food Security Crisis and by IFPRI. The consortium of these ten organizations, coordinated by FAO and OECD, worked in close collaboration with the French Presidency of G20, and provided the policy recommendations requested by leaders. Each of the organizations had undertaken extensive analysis of the problem, or had practical experience is trying to deal with the consequences. The first step involved taking stock of existing knowledge and analysis. As the process developed, each organization participated according to its comparative advantage and specific knowledge and expertise.

The problem definition

Before purporting to provide solutions, it was necessary to agree on the problem definition. The international organizations analyzed the causes and consequences of recent food price volatility and the implications for food security. The synthesis eventually presented to the G20 was comprehensive in scope, recognizing that the extreme price volatility of the 2007–2009 period had sharply added to a chronic problem of food insecurity that had been worsening since the mid-1990s. The approach reflected the view of the collaborating international organizations that price volatility and its effects on food security is a complex issue with many dimensions, agricultural and non-agricultural, short- and long-term, stemming from both supply and demand developments, with highly differentiated impacts on consumers and producers in developed and developing countries.

Differentiated responses

In proposing policy responses, it is important to distinguish between policy options designed to prevent or reduce price volatility and those designed to mitigate its consequences. Both types of intervention were explored in detail. The scope for actions was identified at individual, national, regional and international levels. Some proposed policy responses would help to avert a threat, others are in the nature of contingency plans to improve readiness, while still others address long-term issues of resilience. Finally, the report explores mechanisms of international cooperation to implement its recommendations and to monitor progress. The next sections summarize the rationale for each of the recommendations made by the international organizations and reproduces the recommendations themselves in their entirety.

A comprehensive set of proposals to deal with price volatility and food security

Measures to increase productivity, sustainability and resilience of agriculture

Acknowledging the existence of an underlying, chronic problem of food security, exacerbated in recent years by high and extremely volatile prices, the international organizations concurred that improving the long-term productivity, resilience and sustainability of agriculture, especially in developing countries should be put forward

[1] The Group of Twenty (G20) includes Argentina, Australia, Brazil, Canada, China, France, Germany, India, Indonesia, Italy, Japan, Mexico, Russian Federation, Saudi Arabia, South Africa, Republic of Korea, Turkey, United Kingdom, United States of America and the European Union.

as the key element in any long-term solution. This can contribute to improving food security in several ways. In addition to increasing production *per se*, it can reduce food price volatility, for example through increased productivity and improved technical management of production and of risk, and it can help farmers and households better cope with the effects of volatility, once it occurs. The set of recommendations put forward here (Recommendation 1), if implemented, would probably constitute the single most important contribution to an enduring solution to global food insecurity. While the benefits would accrue in the longer term, actions are needed immediately.

FAO estimates indicate that global agricultural production would need to grow by 70 percent by 2050 and, more specifically, by almost 100 percent in developing countries, to feed the growing population. In the medium and longer term, only investment in developing countries' agricultural sectors will result in sustainable increases in productivity, healthy markets, increased resilience to international price spikes and improved food security. Investments in infrastructure, extension services and education, as well as in research and development, can increase food supply in developing countries and improve the functioning of local agricultural markets, resulting in less volatile prices.

Recommendation 1

G20 governments commit to take comprehensive action to strengthen the longer term productivity, sustainability and resilience of the food and agriculture system world-wide, encompassing several elements.

- Improve food and agriculture innovation systems, encompassing public and private investments in scientific research and development, technology transfer, and education, training and advisory services and ensure that successful practices are scaled up.
- Strengthen the CGIAR system to support technological innovation and global dissemination of technology, in particular to improve productivity performance in less developed countries taking into account the needs of smallholder and especially women farmers.
- Support the development of technologies and provide the appropriate incentives to address challenges specific to climate change and sustainable resource use (land and water).
- Increase public (ODA and national governments) investment in developing country agriculture, and in activities strongly linked to agricultural productivity growth, such as agricultural institutions, extension services, roads, ports, power, storage, irrigation systems and information and communication technology, where appropriate. Link public investment to the provision of sustainable public-private-civil society partnerships.
- Support comprehensive national food security strategies that are country-owned and led, evidence-based and inclusive of civil society and farmer organizations. In this respect, follow up on previous G 20 commitments, such as the Pittsburgh summit commitment, to fund the Global Agriculture and Food Security Program.
- Provide the enabling environment for farmers and other private sector actors to scale up investments, above and beyond ODA and national government spending, to achieve the increased productivity and enhanced resilience on which long term food security will depend. To elicit the needed level of private sector investment, less developed countries in particular will need to support introduction of effective governance systems and institutions, stable macroeconomic conditions, sound structural policies, human capital development and public services.

The investments required in developing countries to support this expansion in agricultural output amount to an average annual net investment of USD 83 billion (in 2009 United States Dollars). 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.

Most of the investment, both in primary agriculture and downstream sectors, will have to come from private sources, primarily farmers themselves purchasing implements and machinery, improving soil fertility, etc. For a better functioning agricultural system and improved food security, three kinds of public investments are also needed:

- direct investment in agricultural research and development particularly on practices that enhance the resilience of small-scale agriculture to climate change and resource scarcity;

- investment in sectors strongly linked to agricultural productivity growth and to strengthening the integration of smallholders into markets, such as agricultural institutions, extension services, roads, ports, power, storage and irrigation systems;

- non-agricultural investment to enhance the rural institutional environment and bring about positive impacts on human well-being, such as investment in education, particularly of women; sanitation and clean water supply and health care.

An important pillar in the effort to improve long-term resilience relates to research, innovation and education. Among the specific dimensions identified as warranting particular attention were: research to enhance the resilience of small-scale agriculture to climate change and scarcity of water and other resources, research to enable agriculture to contribute to climate change mitigation and adaption, attention to innovative technologies for the production of staple crops that are important for smallholders and for food security, extension and education services especially for smallholders and women.

Policy options to reduce price volatility

Market information and transparency

The international organizations agreed that a lack of reliable and up-to-date information on crop supply, demand, stocks and export availability contributed to recent price volatility and induced some hasty and uncoordinated policy responses that actually exacerbated the situation. Better information and analysis of global and local markets and improved transparency could reduce the incidence and magnitude of panic-driven price surges. But action is needed to increase the capacity of nations and international organizations to undertake more frequent and systematic monitoring of the state of crops and stocks, and to develop mechanisms for improved short-run production forecasts.

Information on 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 poor 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, traders and other actors and difficult to track; and some information on stocks is commercially or strategically sensitive. Gaps or deficiencies also have been identified in the monitoring of food prices, in both cash and futures markets, on the relationship between oil prices and food markets, and on knowledge of how international price changes affect domestic markets in developing countries. To remedy these weaknesses in the global information systems, the international organizations made the following recommendation (Recommendation 2).

This proposal has been taken up by G20 members, and the AMIS system is currently being set up. AMIS developments are described in the next article.

International food stocks

The international organizations concluded that buffer stocks, stocks constituted and managed with the intention of influencing prices, have a poor record and that such schemes are particularly inappropriate and ineffective when the intention is to mitigate a price peak. Therefore, no specific recommendation was proposed with respect to buffer stocks. Under the heading of measures to assist the most vulnerable in coping with excessive price volatility, some specific recommendations were made concerning

Recommendation 2

Building upon existing mechanisms, establish an Agricultural Market Information System encompassing four elements.

- G20 governments commit to instruct statistical or other relevant agencies to provide timely and accurate data on food production, consumption, and stocks. Where the mechanisms and institutions are not in place nationally to do so, G20 governments should undertake to create them.
- International Organizations, with broad involvement of countries (G20 and other relevant players) commit to undertake monitoring, reporting and analysing of current conditions and policy developments in major markets as well as to enhance global food security by encouraging information sharing, improving data reliability and increasing transparency, and introducing a global early warning system.
- G-20 governments support the establishment of a Rapid Response Forum, with broad involvement of countries (G20 and other relevant players) building on the proposed Agricultural Markets Information System to promote policy coherence and coordination in times of crisis.
- International Organizations support the improvement of national or regional systems to monitor stocks, production, forecasts (with improved modelling and weather forecasting), food and nutrition security and vulnerability, in order to enhance Early Warning Systems in vulnerable developing countries and regions.

emergency, humanitarian stocks and their management. (These recommendations can be found in Recommendation 7).

Futures markets

The international organizations acknowledge the unresolved nature of the debate as to whether speculation on futures markets has had a stabilizing or destabilizing effect on prices during recent episodes. Some analysts purport that the influx of financial investors in commodity futures markets has scant impact on market prices. Other analysts stress that the large amount of money invested in commodity futures by financial investors has amplified price movements to an extent that cannot be explained by market fundamentals. The international organizations recognized that more research is needed to clarify these questions. With the needed clarification, regulators would be better equipped to reflect upon whether regulatory responses are needed and, if so, the nature and scale of those responses.

Despite these differences, there is widespread agreement that appropriate regulation needs to be in place across all relevant futures exchanges and markets, in order for agricultural commodity derivatives markets to function well and as intended in terms of hedging and price discovery. In particular, there is need for greater transparency about transactions across futures markets and especially across over-the-counter (OTC) markets, transactions that take place outside of the framework provided by the regulated commodity exchanges. Comprehensive trading data need to be reported to enable regulators and participants to monitor information about the frequency and the volume of transactions to understand what is driving commodity prices. It was also acknowledged that the specific nature of the regulatory framework for futures exchanges and OTC markets, whether for agriculture or other commodities, is an issue best addressed by financial market regulators. These conclusions led the combined international organizations to the following set of recommendations (Recommendation 3).

Reducing import barriers, trade distorting domestic support, and all forms of export subsidies

Trade is an excellent buffer for localized fluctuations that originate in domestic markets. Seasonal fluctuations and time lags in trade, and year-to-year variations in domestic production can be more effectively and

Recommendation 3

- G20 governments recognize the need to improve information and transparency in futures and over-the-counter markets and encourage appropriate rules to enhance their economic functions paying attention to the need for harmonization across exchanges in order to avoid regulatory arbitrage.
- Proposed changes should be considered in light of the on-going review of regulatory oversight of all financial markets and not solely agricultural commodity markets, in particular by G20 Finance Ministers and Central Bank Governors.
- The G20 supports the efforts made by the United States, the European Commission and others in addressing transparency and efficiency issues in futures markets.

much less expensively buffered by adjustments in the quantities imported or exported than through buffer stock management. To the extent that shocks tend to be specific to individual regions of the globe, and to partly cancel out on a worldwide level, world output of a given agricultural product is far less variable than output in individual countries. International trade is therefore a potentially powerful engine to even out supply fluctuations across the globe and, as a result, to reduce market volatility.

In the longer-term context, trade is an essential component of any food security strategy. There is significant potential for increased production in many parts of the world, but not all countries everywhere can or should aspire to supplying all their own needs. Doing so is excessively costly, and will reduce choice and quality, without providing the reliability needed to achieve food security. The changes in production patterns likely to be induced by climate change reinforce the need for a well functioning trading system that will allow food to move reliably from surplus to deficit areas.

Despite ongoing reforms, there are still significant barriers to trade in agricultural commodities among developing countries and between developing and OECD countries. They contribute to the "thinness" of international markets that has been blamed for some of the volatility experienced in recent years. Average tariffs on agricultural and food are high for middle income and high income countries, 25 percent and 22 percent, respectively. Protectionism on agricultural products is not only higher than on non-agricultural products (by a factor of four), it is also much more volatile. Agricultural trade policies are designed to insulate domestic prices from world markets and lead to pro-cyclic effects: protection decreases when prices are high, increasing demand on world markets, and protection increases when world prices are low, effectively operating as a variable levy. Therefore, large country trade policies increase world price volatility and create negative externalities for smaller countries. Developed countries continue to support their farming sectors significantly with, according to the latest estimates from the OECD, 18 percent of gross farm receipts generated through support mechanisms and more than half of that support delivered in ways that highly distort production and trade.

Disciplines on export restrictions were considered insufficient and weak during the 2007–2009 period, when export restrictions exacerbated or even, according to most experts, caused severe disruption and a collapse in confidence on international markets. Export restrictions have also contributed to the price increases and general market nervousness experienced throughout 2010 and 2011. Trust in international markets on the part of import dependent countries has been severely eroded and many of them have reverted to stronger self-sufficiency targets in response.

To ensure that international trade is a reliable source of food supply, net food importers should benefit from much stronger guarantees from their trading partners. A "first best option" would be a ban on export restrictions. Countries would address domestic food security issues with direct and targeted support. However, it is most unlikely that a ban on export restrictions would be agreed and, even if agreed, that it would be enforced during a food crisis. On the other hand, reinforced rules, in particular in terms of transparency, are both possible and useful.

Against this background the international organizations made the following recommendations covering production distorting domestic support and trade policy, particularly in respect of export restrictions (Recommendation 4).

Humanitarian exemptions from export restrictions

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 in-country and international 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 means valuable emergency response time and resources are lost, as procurement teams have to spend time negotiating, or finding alternative suppliers from other regions. The international organizations therefore proposed that the G20 adopt the following recommendation (Recommendation 5).

Recommendation 4

G20 governments demonstrate leadership in on-going WTO DDA negotiations, moving immediately to strengthen international disciplines on all forms of import and export restrictions, as well as domestic support schemes, that distort production incentives, discourage supply in response to market demand, and constrain international trade of food and agriculture products. Specifically:

- Substantially improve market access, while maintaining appropriate safeguards for developing countries, especially the most vulnerable ones.
- Substantially reduce trade distorting domestic support, especially by developed countries; and.
- Eliminate export subsidies.

Taking existing WTO rules into account and the state of play in the DDA negotiations G20 governments should:

- Develop an operational definition of a critical food shortage situation that might justify consideration of an export restricting measure. An export ban would be defined as a time-limited measure of last resort, allowed only when other measures, including triggering domestic safety net measures for the poorest, have been exhausted, and taking into account, in particular, the food security needs of least developed countries and net food importing developing countries.
- Widen, strengthen and enforce consultation and notification processes currently in place at the WTO. The intention to impose an export restriction would have to be notified in advance of the action being applied and a "fast track" consultation process could be put in place to discuss whether the measure can be avoided and how. Consultation should be on-going and regular with a view to ensuring that the measure, once in place, is removed at the earliest possible moment.

Reducing policy conflicts between food and fuel

Between 2000 and 2009, global output of bioethanol quadrupled and production of biodiesel increased tenfold. In OECD countries this has been largely driven by government support policies. The international organizations concur that this large, policy-induced demand shock, which has occurred over a relatively short period, had had several notable effects. It has contributed to the price increases, added to price volatility, mainly because mandates create legislative obligations to produce specified quantities irrespective of the price, and contributed to the run-down in stocks also thought to be a significant determinant of current high and volatile prices. The international organizations agreed that high priority should be given to the reform of policies that induce conflicts between the use of crops for food and fuel and made the following detailed recommendations (Recommendation 6).

Recommendation 5

- G20 governments strengthen the commitments made at the L'Aquila and Rome Summits, calling on all nations to allow purchases of humanitarian food, especially by WFP, to be exempted from food export restrictions and/or extraordinary taxes, so that humanitarian food can be purchased, exported and/or transited regardless of any prohibitions, restrictions or extraordinary taxes imposed; and resolve to bring this commitment and call to the UN General Assembly and to the WTO.

Recommendation 6

G20 governments remove provisions of current national policies that subsidize (or mandate) biofuel production or consumption. At the same time, governments should:

- Open international markets so that renewable fuels and feed stocks can be produced where it is economically, environmentally and socially feasible to do so, and traded more freely.
- Accelerate scientific research on alternative paths to reduced carbon emissions and to improved sustainability and energy security.
- Encourage more efficient energy use, including in agriculture itself, without drawing on finite resources, including those needed for food production.
- Failing a removal of support, G20 governments should develop contingency plans to adjust (at least temporarily) policies that stimulate biofuel production or consumption (in particular mandatory obligations) when global markets are under pressure and food supplies are endangered.

Policy options to deal with the consequences of price volatility, particularly for the most vulnerable

Coping with volatility in the short run: buffer stocks and emergency food reserves

Attempts to stabilize food prices using buffer stocks have proved either costly or ineffective. Market based initiatives may be superior in countering food price volatility and enhancing food security in developing countries. Private storage, such as village granaries, can help communities to better match local supply and demand. Private sector storage investments in developing countries, either on-farm, in villages or regionally, are constrained by poor policies and a poor enabling environment generally. Policies that would facilitate access to credit for storage improvements by farmers, cooperatives and private traders should be considered. Producer organizations are critical to food storage development. There also is need for training to build specialized storage management skills both for farmers' associations and cooperatives as well as for the private sector.

Relatively smaller food security emergency reserves can be used effectively and at lower cost to assist the most vulnerable. Unlike buffer stocks that attempt to offset price movements and which act as universal subsidies benefiting both poor and non-poor consumers, emergency food reserves can make food available to vulnerable population groups in times of crisis. In addition, emergency reserves of relatively small quantities of staple foods will not disrupt the normal private sector market development which is needed for long-term food security.

Governments in vulnerable countries should integrate such emergency food reserves in their national food security strategies. Emergency reserves should be integrated with social and food security safety nets and other food assistance programmes, to increase their effectiveness in benefiting the vulnerable. Finally, emergency reserves ought to be adequately resourced and financed, whether by governments, the international donor community, or both.

Reflecting these considerations the international organizations made the following recommendations (Recommendation 7).

Coping with volatility in the short run: International and national safety nets

In times of crisis, contingent and compensatory financing facilities are important mechanisms for assisting countries in avoiding major fiscal deficits and lowering the cost of imported food, while maintaining key social assistance programmes. Budget requirements present significant difficulties, especially for low- income developing countries which do not have the ability to accommodate counter-cyclical expenditures in times of crisis. Foreign support such as that provided under existing international safety nets operated by the World Bank and the IMF, will have to be mobilized if they are to meet the increased demand on their budgets, at a time when such budgetary outlays can have major repercussions on their economies.

Food price surges, as well as increased prices of inputs such as fertilizers, reduce the incomes of poor and vulnerable households, and put stress on family budgets. There are both humanitarian and economic rationale for interventions that mitigate the impact of the shock, maintaining the purchasing

Recommendation 7

- Recognizing the primary responsibility of countries themselves, G20 governments provide support where there is need to increase capacity to implement food emergency reserve systems
- G20 governments support the World Food Programme in the development of a cost-effective system of small, strategically positioned emergency food reserves by the end of 2011.
- A code of conduct be developed by International Organizations to ensure the free flow of humanitarian food supplies, to enhance responsibility and transparency, strengthen the global food security architecture and avoid negative effects on the market.
- G20 governments put in place sustained support for the efforts of humanitarian agencies to assist countries facing crises by ensuring that they have predictable and reliable access to the financing needed, (for example for advance purchasing facilities).

power of vulnerable consumers and the profitability of smallholders through safety nets. For poor consumers, scaling up existing safety nets is a viable option in countries where these are already in place. However, many poor and vulnerable nations and populations have no safety net systems in place and therefore need international assistance. Targeted food safety nets such as child nutrition schemes, job and asset creation and school feeding programmes help vulnerable people cope with price volatility or other shocks and can be scaled-up relatively easily in a crisis (Recommendation 8).

Coping with volatility in the long run: market-based mechanisms to protect producers against price and other risks and to stabilize food import bills

The nature of the risks facing farmers varies from one country to another. The capacity farmers have to deal with such risks also varies across different farmer categories. Smaller farmers may lack access to the knowledge, assets, technologies, market instruments and governance structures that would enable them to manage their risks adequately. In developing countries, smallholders with little capital and limited access to markets often have no possibility of protecting themselves against a variety of risks which characterize less developed agricultural sectors.

Governments face the same risks as farmers. Food production and price shocks can negatively affect their balance of payments and foreign currency reserves and worsen their ability to implement social safety programmes. Market-based mechanisms, such as the use of weather derivatives or hedging instruments to manage production and price risks, may provide an alternative option to international policy solutions such as compensatory financing facilities. However, given the technical nature of

Recommendation 8

- G20 governments support continued provision of efficient, well functioning international mechanisms to assist low income developing countries during food price crises, including provision of adequate contingent financing from the international financial institutions.
- G20 governments support the development of appropriate, targeted and cost effective national safety nets that can be stepped up when needed, ensuring that they are adequately resourced, contribute to the improvement of nutrition and link, when appropriate, to the proposed regional emergency food reserves and distribution systems.

such market-based approaches to managing food price volatility, there is a need to establish and train institutions at the national level (Recommendation 9).

Recommendation 9

- G-20 governments support the scale up of efforts to provide vulnerable households (including producers), communities and governments with effective, market-based risk management options.
- G-20 governments support the scale up of a broader set of fiscal risk management services which include facilitation of commodity hedging, advisory services to strengthen in-country financial risk management capacity, disaster risk financing, and modernization of meteorological services.

Improving international policy coordination in relation to food price volatility: market information and policy responses

Reference has already been made to the weaknesses exposed by the 2007–2008 crisis and again by events in 2010–2011, in relation to the provision of market information at the global level and the coordination of policy responses to food price volatility. In addition to improving the quality, frequency and timeliness of market information, as outlined in Recommendation 2 (AMIS), the international organizations put considerable emphasis on the need for countries to engage in discussion of appropriate policy responses with a view to increasing transparency and avoiding hasty or inconsistent actions that could have damaging consequences. This is the purpose of the Rapid Response Forum which is an integral part of the AMIS proposal contained in Recommendation 2. This important dimension of improved global governance around food security issues is reiterated in Recommendation 10 of the international organizations, which addresses international policy coordination and the role of the international organizations and the Committee on Global Food Security (Recommendation 10).

Recommendation 10

The G-20 should support the proposals made throughout this report to strengthen policy coordination in relation to food price volatility, building on and strengthening existing institutions and networks, improving coordination and timeliness in order to improve readiness, and promoting policy coherence and coordination in times of crisis. The international organisations that have prepared this report are asked to continue collaboration with the G20 to further elaborate the recommendations and, as appropriate, to implement them. The CFS should be charged with the broad task of monitoring the implementation of the recommendations of this report.

Next steps

G20 Agriculture Ministers met from 22 to 23 June and adopted a detailed Action Plan on Food Price Volatility and Agriculture, for submission to Leaders at the G20 Summit planned for 3 and 4 November 2011. The action plan focussed on five main pillars with specific immediate action prescribed and timetables indicated, where agreement could be reached. Further monitoring and analysis was requested in relation to other dimensions. The pillars identified by G20 Ministers were i) agricultural production and productivity; ii) market information and transparency; iii) international policy coordination; iv) reducing the effects of price volatility on the most vulnerable; and v) financial regulation.

The market information and transparency pillar received widespread support from all the G20 countries from the start. The rapid establishment of the Agricultural Market Information System (AMIS) in September 2011, only a few months after the June Ministerial Meeting, underscored the importance given to the issue by the G20 countries and the international organizations involved.

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Agricultural Market Information System (AMIS)

The last few years have been characterized by high and volatile food prices. Stronger demand for food crops, animal products and bio-energy in conjunction with slow growth in agricultural productivity and low stocks will continue to put upward pressure on prices and generate more volatility, In addition, over the past two decades grain production has expanded most in those regions of the world that are more prone to unstable weather. This contributes to food price fluctuations becoming more extreme while also makes the forecasting of food production difficult. According to the latest OECD-FAO Agricultural Outlook (2011-20), high and volatile food prices are likely to continue in the foreseeable future. Therefore, it is important to put effective global food market information mechanisms in place to increase transparency and to inform policy-makers.

Information on the current situation and the outlook for global agriculture shapes expectations of future prices and allows markets to function more efficiently. Better information to governments and market participants can improve transparency and enhance the market functioning. It can also underpin policy choices and market behaviour, thus reducing the incidence and magnitude of panic-driven price surges. Therefore reliable and up-to-date information on crop supply, demand, stocks and export availability can significantly help reduce volatility. It is important that governments and the international community increase their ability to respond rapidly and effectively to food price surges and their impact on food security.

The food price surges of 2008 and 2010 exposed a number of weaknesses in market information systems and in the coordination of actions and policy responses. Weaknesses included lack of reliable and up-to-date information on crop supply, demand, stocks and, especially, export availability from countries and regions. The absence of clear and comprehensive indicators for current market conditions and a lack of transparency resulted in hoarding, panic buying and suboptimal policy choices. At the global level, there is no effective and credible mechanism to identify serious food shortages, so it is difficult to establish links between information, abnormal market conditions and coordinated policy responses.

In their 22–23 June 2011 meeting, the G20 Ministers of Agriculture recognizing the importance of timely, accurate and transparent information in addressing food price volatility, launched the Agricultural Market Information System (AMIS), a collaborative food information initiative. AMIS builds on and complements existing systems and improves global food market information. AMIS is not a new international organization but is a platform through which countries, international organizations and the private sector can work together to strengthen synergies and collaboration in order to improve data reliability, timeliness and frequency. AMIS will also build developing countries' capacity in market outlook analysis and promote policy dialogue.

AMIS focuses on the global food commodities, and, at least initially, with matters relating to wheat, maize (corn), rice and soybeans. It is an open initiative. However, at this early stage, it will include major producing, consuming and exporting countries which together account for a large share of the world food market. Such participation will ensure that key information on factors that affect the food market will be available quickly, analysed and benefit everyone, thus providing a public good for the international community.

AMIS is managed by a joint Secretariat located in FAO, composed of nine international organizations (FAO, IFAD, OECD, UNCTAD, WFP, the World Bank, the WTO, IFPRI and the UN HLTF) with capacity to collect, analyse and disseminate information on a regular basis regarding the current and future food market situation and food policies. These organizations will ensure that the information outputs of AMIS are objective and factual. The International Grains Council (IGC) will cooperate in the development of AMIS, attending its expert meetings and exchanging market information.

The AMIS Secretariat is responsible for global food market outlook analysis based on information provided by the participating countries. It will develop appropriate methodologies and comprehensive indicators, reflecting food market developments in a meaningful way. The Secretariat will also be responsible for assessing the quality of data provided and for the provision and dissemination of high quality food market outlook information products in a timely manner.

In addition to the Secretariat, AMIS includes two groups, performing the following important functions: the *Global*

Food Market Information Group to collect and analyse food market information and the *Rapid Response Forum* to discuss policy responses.

The Global Food Market Information Group will provide information on production, stocks, trade, utilization and prices. It will include food market experts from the participating countries who will be responsible for:

- providing the Secretariat with continuous, quality, reliable, accurate, timely and comparable information on supply, demand and short-term trends;
- helping to improve national statistics and information and data systems;
- collecting information on, and analyzing national policies and their international effects.

The group will also identify gaps in information collection in participating countries and, through specific projects, will strive to build capacity to collect market outlook information and improve the quality of the data in terms of timeliness, coherence and completeness.

The Rapid Response Forum will enhance policy dialogue when the market situation and outlook indicates a high food security risk. As such the Forum will encourage the coordination of policies and the development of common strategies. It will be made up of senior policy-makers from the capitals of the participating countries who will meet when the food market situation warrants but will not decide on policies. Its objective is to promote discussions on options in order to enhance policy coordination. More specifically the Rapid Response Policy Forum will:

- promote early exchange of key information on, and discussion of, prevention and responses to crises among policy-makers;
- assist in mobilizing wide and rapid political support for appropriate policy response and actions on issues affecting agricultural production and markets in times of crisis without seeking to influence humanitarian responses;
- brief and interact with the Bureau of the Committee on World Food Security (CFS) in its deliberations (as proposed by the G20).

The relationship between CFS and AMIS is important. CFS is the foremost inclusive international and intergovernmental platform dealing with food security and nutrition. It provides a platform for coordination and promotes greater policy convergence through the development of international strategies and policy guidelines on food security. CFS includes countries, international organizations, experts and civil society, particularly organizations representing smallholder family farmers, in the policy debate. Its decisions are based on scientific evidence and state of the art knowledge.

AMIS could complement CFS in its efforts to respond to the challenges that emerge from highly volatile food prices. In the AMIS inception meeting 15–16 September 2011, participants recommended making the CFS Chair a Permanent Observer and establishing a mechanism for collaboration between CFS and the Rapid Response Forum. Such strong synergies would make information relevant to food price volatility, actions and policies by various bodies and the food security situation, including threats, available to the CFS Bureau.

The AMIS Terms of Reference as well as its Rules and Procedures as agreed at the inception meeting is reproduced below for reference.

AMIS Secretariat
AMIS-Secretariat@fao.org

Terms of Reference

1. AMIS is an initiative of the G20[1]. It is a global agricultural market information system that concerns itself, at least initially, with matters relating to wheat, maize (corn), rice and soybeans. It is designed to:

   a. improve agricultural market information, analyses and forecasts at both national and international levels;

   b. report on *abnormal*[2] international market conditions, including structural weaknesses, as appropriate, and strengthen global early warning capacity on these movements;

   c. collect and analyse policy information, promote dialogue and responses, and international policy coordination;

   d. build data collection capacity in participating countries.

   This is an open initiative. However, in a first step it will be the result of a collaborative effort between main producing, exporting and importing countries, in association with international organizations and involving the private sector subject to conditions to be defined by participating countries. The participation of any new country is approved by the participants. The Chair of the Committee on World Food Security (CFS) is a Permanent Observer in AMIS. AMIS operates, to the extent possible, by electronic means in order to promote efficiency.

2. In order to ensure the effective discharge of the functions of AMIS, participants commit to provide to the AMIS Secretariat, as far as practicable, in a regular and timely manner, data and information as requested by the Information Group. This includes:

   - National data and relevant supporting information on production, consumption, import, export, stocks and prices for the selected commodities and information concerning the short-term information outlook;
   - Information concerning policy changes likely to impact on the production and trade of the selected commodities;
   - Participation in meetings of the information Group and Forum;
   - Liaison with the information Group and secretariat in the improvement of statistics and information.

3. To carry out its functions, AMIS is composed of:

   a) **The Secretariat** The Secretariat is formed by the following international organizations and entities: FAO, IFAD, IFPRI, WFP, OECD, World Bank, WTO, the UN High Level Task Force (UN-HLTF) and UNCTAD[3]. Organizations contributing financial or staff resources to AMIS have a decision-making role with respect to the overall planning and day-to-day implementation of AMIS. Contributions from the International Organizations to the fulfilment

[1] Argentina, Australia, Brazil, Canada, China, France, Germany, India, Indonesia, Italy, Japan, Mexico, Russia, Saudi Arabia, South Africa, Republic of Korea, Turkey, United Kingdom, United States of America, and the European Union.

[2] The Secretariat will convene, as early as possible, a meeting of experts from international organisations to clarify the concept and definition of "abnormal international market conditions" and to work towards the development of a set of indicators to measure such movements.

[3] To date, FAO, OECD, WFP and World Bank have taken the lead in setting up the Secretariat. Other international organizations have indicated their commitment.

Terms of Reference (continued)

of the functions of the Secretariat will reflect those organizations' comparative advantage and expertise. The Secretariat is housed in FAO headquarters in Rome, supports all functions of the Forum and the Information Group of AMIS, and fulfills the following functions:

i. organizes the meetings of AMIS and prepares documents for the Forum and the Information Group;

ii. assesses the quality of data provided by participating countries and produces high quality market outlook information products for frequent dissemination;

iii. assesses capacity development needs in member countries, in coordination with relevant International Organisations, Regional Organisations and supports development of national market information systems; AMIS efforts in capacity building will focus on:

- a manual defining best practices and methodologies for agricultural market data collection and analysis;
- a series of regional training sessions to enhance data collection capacity and to assist in the development of methodologies for food market outlook; and,
- the identification, design and implementation of special projects, aiming at enhancing data collection, analysis and outlooks.

iv. ensures liaison and regular information exchange with its members organisations, other international organisations and market monitoring agencies, including the International Grains Council (IGC);

v. develops appropriate methodologies and global indicators in collaboration with the Information Group;

vi. if warranted, and where there is a particular urgency for policy coordination, draws the attention of the Rapid Response Forum ('Forum'), on the basis of the work described in points ii and v above;

vii. in collaboration with the Chair, ensures liaison and regular exchange of information with the Secretariat and Bureau of the Committee on World Food Security (CFS);

viii. receives information on food security assessments in vulnerable countries from national, regional and international early warning systems, including the FAO Global Information and Early Warning System (GIEWS) and the Food Security Analysis Service (VAM) of the WFP;

ix. issues press communiqués concerning the activities of AMIS, in consultation with the Chair of the Information Group and the Forum;

x. acquires funds for the operation and activities of AMIS in conformity with the Financial Regulations of FAO and in accordance with the principles set out in the Action Plan; and

Terms of Reference (continued)

xi. inform the Information Group and the Forum regarding its main activities and outputs, and:

xii. undertakes such other functions in support of AMIS, as required.

b) **The Global Food Market Information Group ('Information Group')** The Information Group consists of technical representatives from countries participating in AMIS. The field of competence of the Information Group covers production, stocks, trade, utilization and prices (including futures prices). Its members fulfill the following functions:

i. provide regular reliable, accurate, timely and comparable data regarding the supply and demand position and its probable short term development, as well as regarding prices, of the four commodities covered by AMIS with the view to support its early warning aspects;

ii. organize the timely collection of national policy developments that could impact the market situation and outlook and collation of reports covering agricultural markets, in particular for commodities covered by AMIS;

iii. promote the improvement of statistics and information, including the enhancement of national information systems as well as related databases;

iv. act as a conduit to each AMIS member country to facilitate the sharing of data and market information;

v. share improvements on data collection methods and provide the Secretariat with guidance on capacity building; and

vi. work closely with the AMIS Secretariat, exchanging relevant information on a timely basis and representing their country at AMIS meetings.

c) **The Rapid Response Forum ('Forum')** The Forum is composed of Senior Officials from countries participating in AMIS. It is designed to promote early discussion among decision-level officials about *abnormal* international market conditions to encourage the coordination of policies and the development of common strategies. In particular, it:

i. promotes early information exchange and discussion on crisis prevention and responses among policy-makers;

ii. assists in mobilizing wide and rapid political support for appropriate policy response and actions on issues affecting agricultural production and markets in times of crisis, without seeking to influence humanitarian responses; and

iii. briefs and maintains a two-way dialogue with the Secretariat and the Bureau of the Committee of World Food Security on the deliberations of the Forum.

Rules of Procedure

1. **The Agricultural Market Information System (AMIS**) consists of:

   a) The Secretariat, which is responsible for producing market outlooks, assessments and analyses, for supporting all functions of the Forum and the Information Group, and for performing such other functions as provided in these Rules; and

   b) The Global Food Market Information Group ('Information Group'), which provides and assesses market and policy information; and

   c) The Rapid Response Forum ('Forum'), which promotes early discussion among decision-level officials about abnormal international market conditions to encourage coordination of policies and the development of common strategies.

   The functions and roles of the Forum, the Information Group and the Secretariat are described in the "Terms of Reference" of AMIS.

2. **Participants:** The Participants in AMIS are the G20 countries, Spain, as well as non-G20 countries that are approved by the Participants of AMIS on the basis of their significant share in global production and trade for those commodities covered by AMIS.

3. **Secretariat:** The Secretariat of AMIS is formed by the following International Organizations and entities ('International Organizations'): FAO, IFAD, IFPRI, WFP, OECD, World Bank, WTO, UNCTAD, and the UN High Level Task Force (UN-HLTF)[1]. The Secretariat is housed in FAO headquarters in Rome and conducts its activities in conformity with the Financial Regulations of FAO.

4. **Chair:** The participants in AMIS elect a Chair country from among the countries participating in AMIS to preside over meetings of the Forum and the Information Group. The Chair country is elected for one year.

5. **Secretary:** The International Organizations forming the Secretariat appoint a Secretary whose employment is governed by the Staff Regulations of FAO. The Secretary performs such duties as the work of the Secretariat may require, and prepares the records of the AMIS meetings. Should the Secretary be an employee from an international organization other than FAO, his/her services will be seconded to FAO.

6. **Meetings of the Forum:** The Forum will meet as needed, but in principle not less than once per year, and will promote early discussion among decision-level officials whenever there is a need for coordination of policies and the development of common strategies. Meetings will, to the extent possible, be held back-to-back with other international meetings to promote efficiency.

7. **Meetings of the Information Group:** The Information Group holds at least two meetings per year. However, the Chair may, in consultation with the Secretary, call for additional meetings if deemed necessary. To the extent possible, those meetings will be held through electronic means.

[1] To date FAO, OECD, WFP and the World Bank have indicated that they will assign staff to the Secretariat.

Rules of Procedure (continued)

8. **Agendas:** The Secretary of AMIS, in consultation with the Chair, prepares provisional agendas and circulates them two weeks in advance of meetings of the Forum and the Information Group to all participants. This requirement does not apply for meetings of the Forum in cases of urgency, as determined by the Chair. Participants may, by general consent, modify the agendas of meetings of the Forum and the Information Group. Each meeting of the Forum and the Information Group will begin with a presentation of the agenda for modification and/or adoption by participants.

9. **Location:** Meetings of the Forum and the Information Group will normally be held at FAO headquarters in Rome, Italy, or at the facilities of one of the participating organizations or countries, subject to the approval of the Chair and the Secretary.

10. **Language:** The language of meetings of the Forum and the Information Group, their working documents and reports, will be English.

11. **Recommendations:** The presence of more than half of the participants in AMIS is required at meetings of the Forum and the Information Group to establish a quorum. Recommendations will be made on the basis of consensus among AMIS participants.

12. **International Organizations:** Meetings of the Forum and the Information Group may be attended by representatives from International Organizations that are not taking part in the Secretariat, who can make interventions.

13. **Experts and Observers:** The Secretary and the Information Group may invite experts and observers, subject to conditions to be defined by the participating countries, including the private sector and relevant market monitoring agencies, to contribute to the work of AMIS and participate in meetings of the Information Group.

14. **Reports:** The deliberations and recommendations of the meetings of the Forum and the Information Group are reflected in meeting reports, which are circulated to all participants in AMIS, complying rules decided by respective above mentioned groups.

15. **Status of Rules:** The foregoing rules are agreed to by the participants of AMIS. They may be modified by consensus.

Futures markets signal change: Interpreting price behaviour

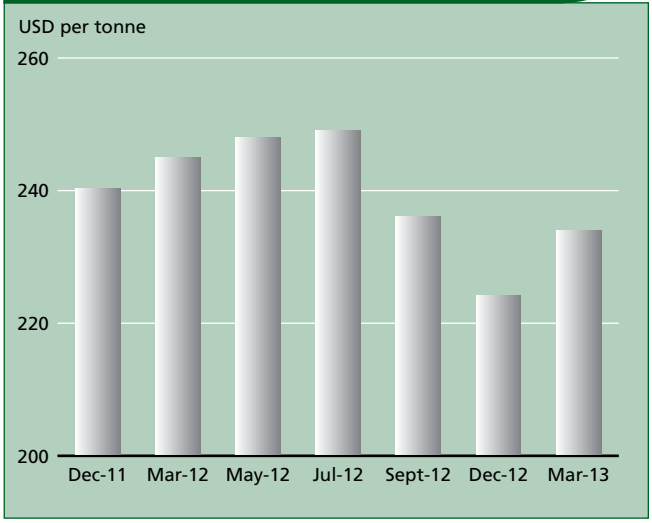
Greater understanding of global markets is one of the main objectives of AMIS. For this reason, identifying indicators which can signal changing market conditions on a timely basis will be among its first outputs. This section briefly describes two indicators, commonly used by participants in the futures and cash markets, which are relevant to importers and exporters. The first indicator, calendar spread differentials, provides a gauge of the overall supply and demand of the commodities covered by AMIS; the second, price arbitrage, provides a gauge of geographical (United States and Europe) supply and demand. In addition, this section describes a methodology for improved understanding of price behaviour which calls for mapping price together with volume in the form of a market profile.

Calendar spread differentials

Calendar spread differentials (hereinafter called "spreads") are derived from the closing prices of the sequential contract months of any commodity futures contract. They indicate expectations of near and distant prices, which are particularly relevant for renewable commodities such as grains and oilseeds which experience a yearly harvest, in contrast to metals and most energy products that are stored in the earth until extracted. Spreads in grains usually reflect the northern hemisphere crop cycle, which commences in June/July for winter wheat and October/November for maize, rice, soybeans and spring wheat. However, southern hemisphere crops, particularly soybeans, that are harvested mostly in April/May have increasingly impacted spreads as these supplies have grown enormously in the past 20 years and comprise a significant part of the export market.

Futures prices are characterized as either upward sloping, meaning that futures contracts reflect successively higher prices, called "contango", or downward sloping, called "backwardation". Markets exhibiting contango indicate a surplus supply situation and those exhibiting backwardation a deficit. Historically, most grains and oilseeds exhibit both within the crop year. The contract months representing harvest through mid-season usually configure in contango, reflecting the market's willingness to store commodities. The contracts representing the latter half of the crop cycle often configure in backwardation, reflecting the market's need to draw out the diminishing supplies or, in cases of extreme supply deficits, the market's need to ration demand.

Figure 1: CBOT maize futures settlement prices 10 October 2011 showing both contango and backwardation, a normal configuration for most grain and oilseed commodity futures markets



The arithmetic differences between the various contract months of a single commodity futures contract are called "calendar spreads" and quoted as tradable differentials in the marketplace. When the deferred month of the spread is higher than the nearby month, then the spread is quoted on a negative basis. If, for example, 2011 December maize is trading at USD 240/tonne (USD 6.09/bu) and the 2012 March maize is trading at USD 245/tonne (USD 6.22/bu), given liquid arbitrage between these two prices, the December/March maize spread would be quoted at minus USD 5.00/tonne or USD 5.00 under (-USD .13/bu). Conversely, if the July 2012 maize is trading at USD 249/tonne (USD 6.32/bu) and can be arbitraged against the December 2012 maize at USD 224/tonne (USD 5.69/bu), then the spread would be quoted at plus USD 25/tonne or USD 25 over (+USD .63/bu). Spreads are heavily traded as differentials by both commercial and speculative traders; indeed the Commitment of Traders Report (CFTC) reserves a separate category for spread trading as a percentage of open Interest by both managed money and swaps dealers.

The trade strategy of buying the nearby month and selling deferred is called a "bull spread", while doing the opposite is called a "bear spread". The spreads representing the old and new crop months, i.e. the July/December maize spread or the July/November soybean spread are the most highly watched and the most revealing of the supply-and-demand situation. They indicate both the resolution of the old crop balance sheet and the harvest crop prospects.

Spreads are dynamic price indicators as evidenced by the 2010–2011 marketing season. The CBOT July/September 2011 wheat spread experienced an historical move from a steep contango of -USD18/tonne (-USD.50/bu) to even money (zero differential) in July 2011 when the wheat basis in the delivery market shot up sharply. Traders cited heavy substitution of wheat for maize by both feeders and ethanol plants, owing to wheat's discount to maize. As a result, the end users in Chicago and Toledo accustomed to buying spot were caught short of the physical supplies and they, as well as other traders, used the July contract as a long hedge against their shorts. With respect to maize, both

Figure 2: CBOT Wheat Calendar Spreads during May 2011, exhibiting July-September Contango

Figure 3: CBOT Wheat Calendar Spreads during July 2011, exhibiting July-September Even Values

Figure 4: CBOT Maize Calendar Spreads during July 2011, exhibiting September-December Backwardation

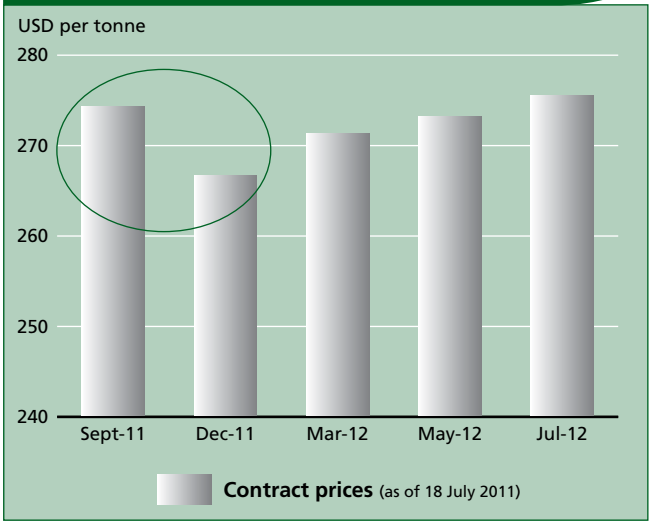


Figure 5: CBOT Maize Calendar Spreads during September 2011, exhibiting September-December Contango

Figure 6: July/Sept 2011 CBOT wheat spread – Range from - USD 18 to USD 0 (per tonne)

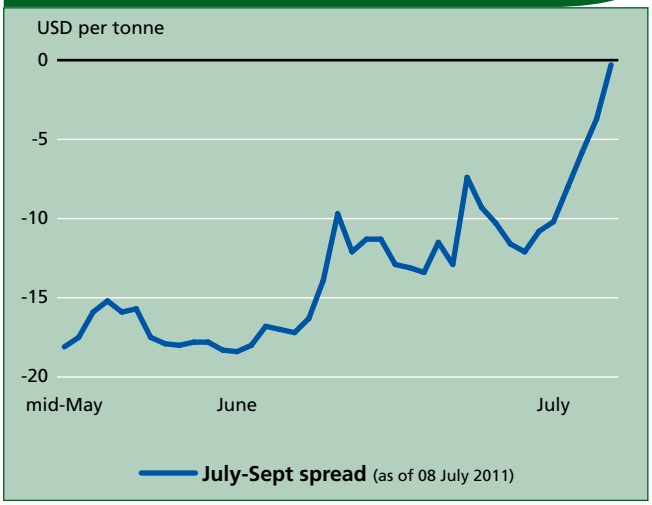


Figure 7: September/December 2011 CBOT maize spread – Range from + USD 20 to - USD 5 (per tonne)

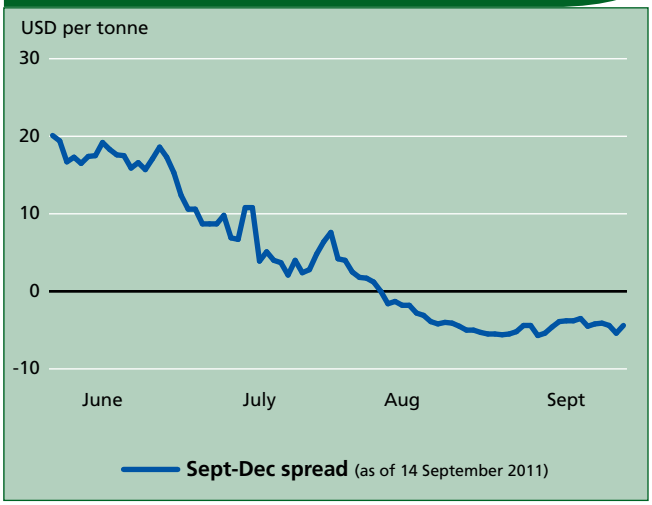


Figure 8: April 2011: CBOT and NYSE Liffe (Matif) Wheat Futures (May 2011 contract)

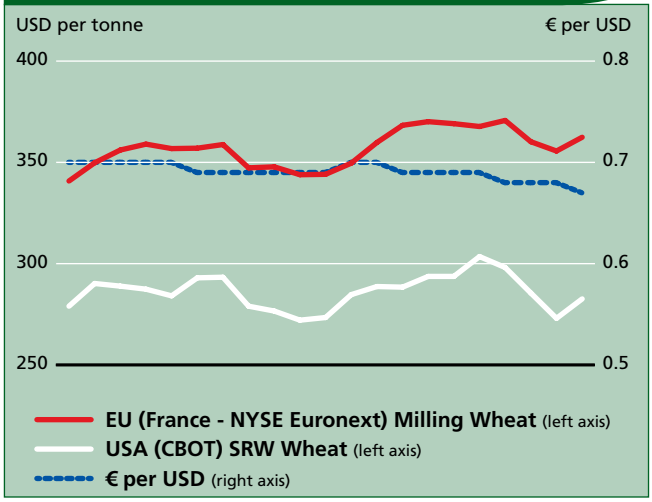


Figure 9: April 2011: KCBT and NYSE Liffe Wheat Futures (May 2011 Contract)

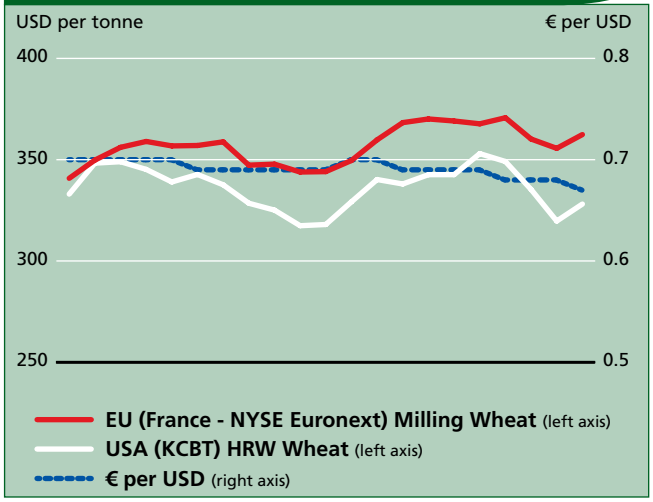


Figure 10: August 2011: CBOT and NYSE Liffe Wheat Futures

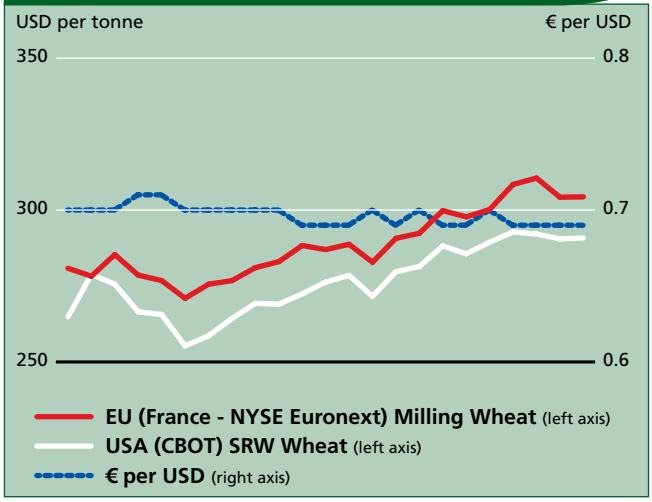
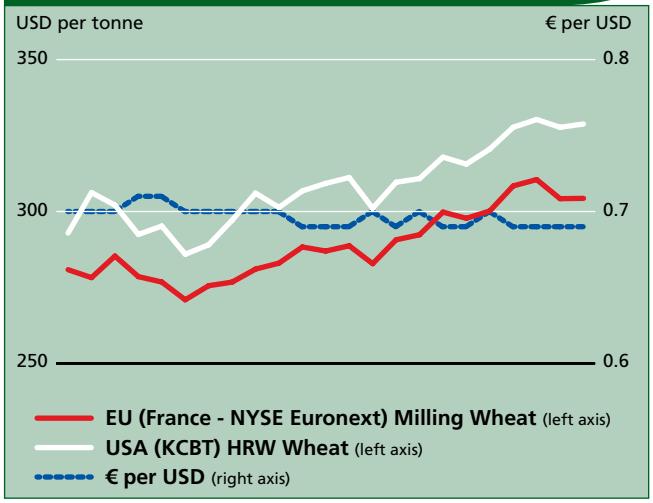


Figure 11: August 2011: KCBT and NYSE Liffe Wheat Futures



wheat for maize substitution and overall demand rationing as a result of the sustained high price was signalled by the September/December maize spread: it collapsed from its backwardation level of USD 20/tonne over (+USD .51/bu) to USD 5.5/tonne under (-USD .15/bu). Indeed, the USDA 30 September 2011 stocks report validated the amount of demand rationing that occurred during the last quarter of the crop year by publishing an ending stock figure of 1.13 billion bushels (28.7 million tonnes) for 2010/11 season, 22 percent higher than previously reported. Spreads are significant warning mechanisms of changed market conditions. As such, spreads need to be monitored on a regular basis.

Price Arbitrage – United States versus French Wheat

Although the CBOT soft red wheat contract remains the most liquid wheat contract in the world, the Matif milling wheat contract, has grown rapidly in volume since the 2007 food crisis and now provides a valuable enhancement to the global wheat price picture. Unlike many recently developed futures contracts that seek to manage price on a country level (China, India, South Africa), the Matif contract is an export contract with its price determined by deliveries in-store Rouen, a deep water port in northern France. The open interest in the Matif contract stood at around 245 000 contracts (12.25 million tonnes) at the end of September 2011 and daily trading volume has averaged around a million MT per day since the start of 2011.

A comparison between the Matif wheat and CCBOT/KCBT wheat would help to explain regional supply and demand balances at a glance. An examination of the two pairs of monthly wheat price charts, April 2011 and August 2011, reveals the price response to the changing regional balance sheets. During April, Matif wheat was a large premium to CBOT wheat and lesser premium to KCBT Hard Red Wheat, as a result of the diminished production and export controls in the Black Sea region. Following the favourable early outlook for the 2011 crop and the Russian Federation's announcement in July 2011 that it would resume wheat export shipments, French wheat experienced a sharp decline in its premium over CBOT and a reversal, from premium to discount, against KCBT.

Market Profile

Market profile is a system developed by the CBOT together with an independent trader 25 years ago that examines price and volume data to determine a price range of "market acceptance". According to market profile theory, the price auction process organizes price and volume into a bell curve over time, with the mode reflecting the highest volume. The prices that represent 70 percent of the trade are considered the "value area" and the prices below and above (approximately one standard deviation from the mean) are deemed the support and resistance levels. Prices approximately two standard deviations away from the mode are deemed "rejected". Prices remain range bound until a new set of prices begins to build in volume outside the bounds of the previous bell curve. Proponents of this methodology claim that organizing price data in the form of a bell curve based on trade volumes provides a map of the price discovery, rendering a more meaningful picture of transactions than charting, which focuses solely on the price series over time.

Analysts cite the strength of this trade system (i.e. the bell curve) because it:

- is statistically valid;
- reflects actual market development;
- reveals depth and breadth of market;
- identifies support and resistance levels;
- eliminates the seeming randomness of markets;
- validates the auction market theory which posits that prices cluster around a value area mutually determined by buyers and sellers;
- reveals how markets spend most of their time in horizontal development (price consolidation) rather than trending.

Market profiling appears to be undergoing a revival following some adjustments to its methodology, necessitated in part by the migration from pit trading to electronic. The system appears to contain medium- to long-term price analysis that could qualify it as another sound market indicator. Because it can readily identify the value

area of every grain and oilseed commodity, it could prove particularly useful to food-deficit countries trying to cope with commodity price volatility. Shown alongside a standard price chart, it would immediately identify which price spikes (both up and down) failed to gain "market acceptance." As such, Market Profile would complement historical/implied volatility, which reflects price variability without regard to volumes traded.

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National policy responses to cereal price spikes during 2007-2011

One of the important areas of work of the AMIS is collecting information on national policies on a timely basis and analysing them for their consequences for the global food markets. This review of recent policies is an example of the type of policy briefs that AMIS will strive to present in the coming months and years.

The generally high food prices and increased volatility in the global food markets since 2007, with five spikes in cereal prices in particular, triggered many and varied policy responses across the world as country after country faced rapidly rising food prices in their domestic markets (as documented in the next note). Several agencies have compiled information on policy responses on foodstuffs during this period. For example, a 2008 FAO survey based on information for 77 countries found that about half of the countries surveyed took measures to reduce food import taxes, 55 percent used price controls or consumer subsidies, 25 percent imposed some form of export restrictions, 25 percent took actions to increase supply drawing on cereal stocks and 16 percent showed no policy activities whatsoever. A similar picture emerged from more recent updates by FAO and other agencies and researchers.

The purpose of this note is similar. It summarizes policy responses under the following five headings, albeit selective but reflecting both longer- and shorter-term measures: i) increasing prioritization to food production and higher self-sufficiency targets; ii) higher outlays on food production; iii) increasing trends towards greater public sector involvement in domestic food markets; iv) varied ad hoc responses to contain food prices; and v) export restrictions. The commentary also highlights emerging issues and national debates on food policy.

Increasing emphasis on food production and self-sufficiency

The food crisis has prompted many countries to accord greater weight to food production and set higher targets for self-sufficiency, as part of their national food security strategies. While increased import parity price naturally moves domestic food production levels upwards, much of these policy responses appear to be related to the food crises and experience with price spikes. There is a feeling that the world food markets have become less reliable. In some cases, these policy positions were articulated earlier but were reiterated as a response to the crisis. For example, China had a policy of "grain security" for some years, with a target of 95 percent self-sufficiency. But support to grain production was stepped up markedly during the past four years and in November 2009, China released its *National Plan for Expansion of Grain Production Capacity by 50 billion kilograms (50 million tonnes) during 2009-2020*, reiterating the policy of 95 percent self-sufficiency in cereals. The Russian Federation announced in January 2010 a *Food Security Doctrine* with, *inter alia,* quantitative goals for minimum self-sufficiency, which is 95 percent for grains. In West Africa, many governments have launched new campaigns for rice production and new targets for self-sufficiency, in response to the global rice crisis. Benin, Cote d'Ivoire, Mali and Senegal have new national rice programmes geared towards self-sufficiency, or markedly raised targets, within the next four to five years. Elsewhere, Bangladesh, Indonesia and the Philippines have reiterated or announced self-sufficiency goals for rice. Malaysia also revised its rice self-sufficiency target to 86 percent from about 72 percent currently.

Some regional economic groups have responded similarly. In West Africa, the 2008 food crisis prompted a reformulation of the regional agricultural programme. In June 2008, Heads of State of the ECOWAS members held a summit in response to the food crisis and announced a programme of promoting regional food value chains (rice, maize and tubers) for attaining food sovereignty. The East African Community (EAC) is developing a similar strategy under its regional food security strategy.

Increased outlays on farm support and innovative schemes

Consistent with this shift in strategy, many governments around the world have announced new pledges as well as raised outlays on food production programmes. One of the immediate and conspicuous responses to the food crisis in 2007-08 was fuel and fertilizer subsidies, as well as seeds and farm credit. This was clearly visible in many countries in Africa, as well as elsewhere such as in Bangladesh. Innovative schemes, such as "smart subsidies" for fertilizers and public-private partnerships, are also being tested. In China,

outlays on grain production support programmes, direct income support as well as subsidies on seeds, machinery, fuel and fertilizers, increased by over four times between 2006 and 2010. Outlays on rice programmes have been raised significantly also in Malaysia. Encouraging production through support price schemes, with public procurement to defend that price, has been another important response. Where these schemes existed, support prices were raised markedly, such as in China and India, while new schemes were announced in some other countries.

These national commitments have been complemented by pledges of external assistance to agriculture at the high-level international summits and conferences, all in response to the food crisis. Overall, the food crisis and price spikes, and projections of high and volatile food prices, have had considerable influence on both the thinking and actions. There is thus a change in the perception that food production was underfunded in the past and countries ought to be making much more effort for developing this subsector.

Increased involvement of the public sector in food markets

While not many countries have sizable programmes on public procurement of food grains as part of a scheme to support farm price and maintain public reserves, recent trends, decisions and policy discussions all point towards increased market interventions. The likely impact of the increased role of the state in grain markets has accordingly been a lively policy issue for debates and analysis. In India, public procurement of cereals during the past four seasons has been historically high, averaging about 30 percent of the total output of rice and wheat, and markedly higher than the public reserve norms. India will most likely continue with large procurements in view of the projected needs for some 60–70 million tonnes of cereal to implement its new National Food Security Act from 2012 onwards. In China too, wheat procurement has increased and averaged about 35 percent of the total output in the past three years. In Ukraine and the Russian Federation, which are major exporters, public procurement as a share of total output remains historically low but recent discussions and some decisions point towards increased procurement in the coming years, for food security (containing bread prices) and, in the case of the Russian Federation, for supporting meat production. Also in the Russian Federation, new schemes such as grain collaterals and regional food funds for procurement are being discussed.

For the world rice market, the likely impact of the 2011 return to the Paddy Pledging Programme (PPP) in Thailand is being watched with keen interest. This will replace the Price Insurance Scheme (PIS) under which farmers received direct payments based on price gaps and did not involve public procurement. Depending on the pledging price set, the PPP will both increase public procurement and raise export price. In Africa, where there are very few schemes such as those in China and India, the main debate has been around the size and role of grain reserves, i.e. the level of the stocks and whether these would be used to stabilize market prices. For example, under its *Food Security Action Plan 2010-2015,* the EAC has proposed that its member countries increase their reserves considerably. Proposals such as these, including at the national level, have triggered fresh debate on the relationship between increased reserves on the one hand and the level of the market prices and their volatility on the other. The role of stocks versus trade in ensuring price stability and food security countries was also much debated in the 1970s and 1980s.

Varied ad hoc responses to contain the retail price of basic foods

One of the prominent challenges that many governments faced during the review period was containing consumer prices. This was more difficult where the consumer good happened to be processed products of the primary grains, such as breads and pasta, but even flour in some cases. Some governments that restricted cereal exports found that while grain prices were contained, prices for processed products were not. This prompted several responses towards directly regulating the markets such as through price caps and negotiating maximum prices. Middlepersons and processors were often blamed for lack of competition as well as hoarding and speculation. These experiences raised, once again, questions as well as debates on the functioning of the domestic food markets, and the role of the government.

As an illustration, the correlation between the price of grains and bread was noted to be relatively low in the Russian Federation, to the extent that when wheat prices started to decline from March 2011, bread prices continued rising. As a result, some actions were taken and some proposals floated. In February 2011, as domestic wheat prices were peaking, the Government helped bring three relevant unions (grain producers, millers and bakers) to negotiate minimum prices of milled wheat through July

2011. A suggestion also was made for establishing a list of socially significant products for capping retail price mark-ups at 15 percent over their wholesale price. In Ukraine, a list of "socially sensitive products" was drawn, which included all grains and some edible oils, for controlling retail prices and margins when needed. Both in China and India, some administrative measures were taken to prevent hoarding and speculation, including limiting participation in auction and futures markets. In Sri Lanka, the Government fixed maximum retail prices for a number of essential products such as rice, wheat flour, poultry and sugar. As the farm prices of some of these products were also administered, safeguarding both prices with limited instruments, such as tariff, became challenging. Fixing or capping the retail price of essential foods was also a common response in many countries in Africa. For example, in Cameroon, an agreement was struck in February 2010 among industry groups and wholesalers to freeze the prices and, in January 2011, the Government of Ethiopia set the maximum consumer prices for 17 basic foods including rice and bread.

Export restrictions being relaxed but the debate continues

As noted at the outset, about one-third of the surveyed countries had applied some form of export restriction during 2007–2011. These restrictions came in various forms: simple ordinary taxes (both *ad valorem* and specific), variable tax, differential taxes based on the stage of processing, Minimum Export Prices (MEPs), quotas and outright export bans. In several cases, various instruments were used in combination, both sequentially and concurrently, as policy-makers reacted to rapid changes in food prices at home and abroad. A typical sequence began with ordinary taxes, followed by quotas and then a full ban, with MEPs combined with taxes and quotas in some cases.

Export restrictions were lifted or relaxed generally following the end of the 2008 spikes, but some countries either continued the policy until after the end of the second spike in 2011 or are still maintaining the restrictions. Restrictions on food exports also have attracted a great deal of debate, both within restricting countries and globally. These debates have typically focussed on some aspects of the policy: impact on the global price spikes; effectiveness within countries in stabilizing consumer prices and impact on producers; impact on longer-term production and market development; and appropriateness of alternative instruments. These debates occur among various stakeholders such as industry groups (farm, processors and traders), consumer groups and the government, at times even among different ministries.

As an illustration of some of these policy developments and debates, the export bans on grains were fully lifted by the Russian Federation on 1 July 2011, with debates taking place on its impact on food inflation, which was high, and whether some modest levels of taxes may need to be imposed, including a scheme based on variable taxes. In Ukraine, export quotas were lifted on 1 July 2011 and replaced with export taxes, which were compound rates of *ad valorem* and specific taxes. These taxes were removed in October 2011 but discussions continue on reimposing the taxes if exports surge, creating shortage at home. Elsewhere, India has resumed exports of wheat and rice but under quota. In Viet Nam, the MEP continues to remain the main instrument for exporting rice, with the MEPs adjusted frequently. In many of these cases, domestic food price inflation remains the main concern, and thus the trigger, for adjusting export restricting measures.

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Review of changes in domestic cereal prices during the global price spikes

AMIS aims at improving the collection of statistics on various aspects of the national food economy and analyse them with a view to improving the policy process for containing excessive volatility. It is in this context that this first issue of the AMIS output includes an analysis of the national experiences on recent changes in domestic cereal prices.

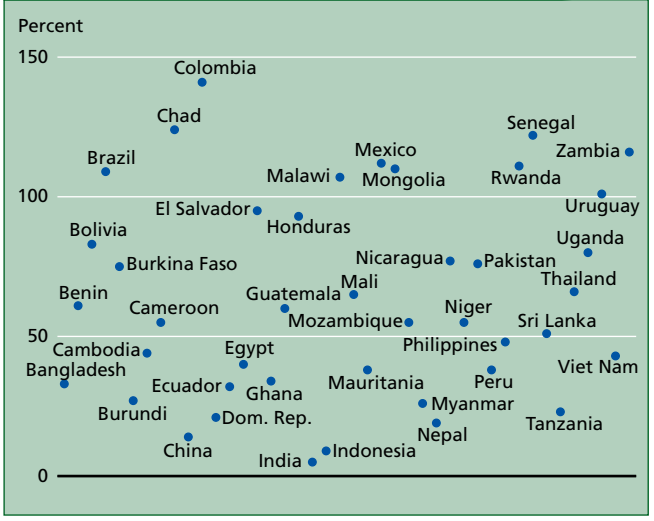
During the periods of global food crisis and price spikes that have occurred since mid-2007, there have been reports of widespread price rises across the world. Changes in domestic prices are determined by a number of factors, one of them being prices in the world markets. The strength of this relationship varies across countries and commodities depending on several factors, such as the level of self-sufficiency, natural barriers and policies that moderate the transmission. For example, domestic rice prices in Africa are often found to be more closely linked to the world price than domestic maize prices for the simple reason that the volume of maize imports in Africa is very small and so domestic output and other factors play the dominant role. A proper analysis of price transmission would use econometric techniques and include these factors, besides the changes in the world prices. Future AMIS information briefs should be based on such analysis. But the review below is mostly descriptive, essentially documenting how much cereal prices changed domestically. To demonstrate the order of the magnitude involved, these changes are expressed relative to the changes in the world market prices during the periods corresponding to the spikes, not necessarily implying transmission in the sense understood in the econometric literature on market integration. Thus, although the term "transmission rate" is used below, this is essentially a ratio of the change in the domestic price to that in the world price.

The review utilizes 155 series of domestic cereal prices cereal prices from 52 countries, maintained by the FAO Global Information and Early Warning System (GIEWS). It covers five periods when the spikes occurred in the world markets: three in 2007/08 consisting of one each for rice, wheat and maize; and two in 2010/11 consisting of one each for wheat and maize. The domestic data show that for most countries cereal prices did not stop rising when the spike ended in the world markets but continued to rise strongly for two to three months more, reflecting lagged transmissions. For this reason, two additional months are added for computing changes in the domestic prices.

Rice

Rice prices spiked from October 2007 to May 2008. Between these months, the price of Thai A1 super rose by USD 475/tonne (or 160 percent) and Thai 100% B by USD 625/tonne (or 185 percent). After receding to a low point in November 2008, rice prices essentially fluctuated until July 2011 around a mean that was markedly higher than during the pre-spike period. In the corresponding period (including two more months for domestic prices), domestic prices rose on average for the 42 countries covered from USD 605 to USD 910, i.e. by USD 305/tonne (or 50 percent), for a transmission rate of 64 percent (USD 305/475) using Thai A1 (and 49 percent using Thai 100% B). Figure 1 shows these rates for 42 countries, using the Thai A1 for the world price. In ten cases, transmissions exceeded 100 percent, i.e. domestic prices rose by more than the change in the world price, and in 15 other cases, the rates were in the 50–100 percent range. Transmissions were below 50 percent for the remaining 17 countries.

Figure 1: Rice transmission



Price rises in local currency (LC) terms were lower than in the United States Dollar terms for 23 of the 37 countries with both price series. In 15 of these 23 cases, price increases in the LC terms were lower by 10 percentage points or more than in the United States Dollar terms. For example, the price of rice in Brazil rose by 67 percent in United States Dollar terms and by 48 percent in LC terms, and in China by 20 percent in United States Dollar terms and 10 percent in LC terms, reflecting currency appreciation. On the other hand, LC prices rose more than the United States Dollar price in 11 cases, but markedly so only for Pakistan (144 percent versus 109 percent) and Ghana (32 percent versus 18 percent), reflecting currency depreciation.

As stated above, domestic prices were still rising beyond the May 2008 peak in the world market. Prices in July 2008 were higher than in May 2008 in 31 of the 42 countries, by USD 59/tonne on average for this sample. Lastly, by region, transmission rates were relatively lower for Asian countries (42 percent) than in Africa (70 percent) and Latin America (74 percent).

Wheat

Wheat had two spikes: from May 2007 to March 2008 and from June 2010 to February 2011. This analysis uses 56 price series from 26 countries, 27 for the first spike and 29 for the second. For each period, 12 series are for wheat grain and the rest for wheat flour. Although the two products are not identical, changes in the grain prices are expected to influence the flour prices strongly in the domestic markets. The two spikes are reviewed separately.

The first spike, May 2007 to March 2008

In this period, the world price (US #2 Hard Red Winter) increased from USD 203/tonne in May 2007 to USD 482/tonne by March 2008, a rise of USD 279/tonne (or 137 percent). Corresponding to this spike, and adding two more months for the domestic series, the average change in the price of *wheat grain* for 12 countries was USD 221 per tonne, which gives a transmission rate of 79 percent (USD 221/279), higher than the 63 percent for rice. Figure 2 shows these transmission rates. Transmission was lowest for both China and India, 11 percent for both, while, at the other extreme, it exceeded 100 percent for four countries (Bolivia, Egypt, Ethiopia and the Sudan). As with rice, price rises were lower in the LC terms than in the United States Dollar terms, by 17 percentage points on average.

As for *wheat flour*, the average price for 15 countries rose from USD 562 in May 2007 to USD 939 in May 2008. With this change of USD 377, the transmission rate was 135 percent (USD 377/279). Even counting only until March 2008, this rate was 108 percent on average. Figure 2 shows these rates for the covered countries. Nepal was an outlier, in that flour price fell by 11 percent. Transmission exceeded 100 percent for 10 of the remaining 14 countries, and

Figure 2: Wheat transmission - first spike

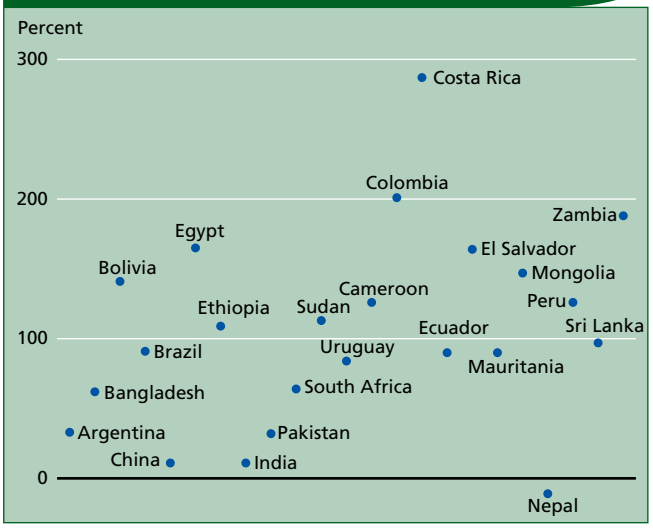
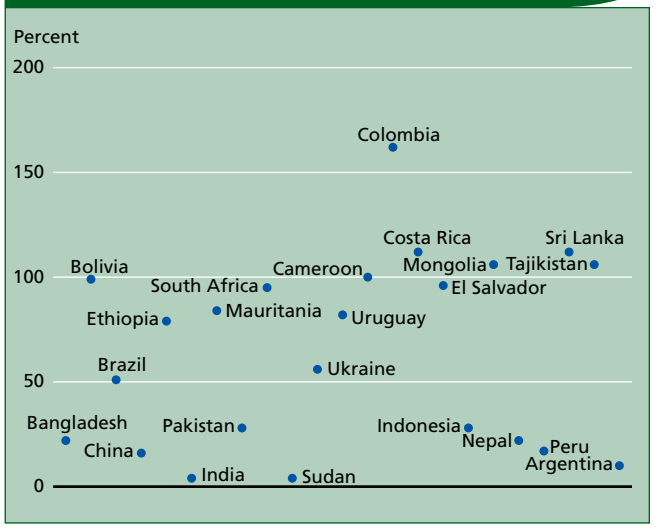


Figure 3: Wheat transmission - second spike



was between 50 to 100 percent for the three others. Price changes in the LC terms were lower than in the United States Dollar terms in most cases.

The second spike, June 2010 to February 2011

In this period, the world price increased from USD 183/tonne in June 2010 to USD 362/tonne by February 2011, a rise of USD 179/tonne (98 percent). The price dipped for a month and rose again in April 2011. For *wheat grain*, the average change in the domestic prices for the 12 countries with data (counting two additional months until April 2011) was USD 92 per tonne, which gives a transmission rate of 52 percent (compared with 79 percent in the first spike). Figure 3 shows the transmission rates. These were above 50 percent for seven of the 12 countries but not over 100 percent in any case, and were below 20 percent for Argentina, China, India and the Sudan. Besides being markedly lower than in the first spike, domestic prices did not generally continue to rise strongly after peak in the world price in February 2011.

As regards *wheat flour*, the change for 17 countries averaged USD 133/tonne, which implies a transmission rate of 74 percent (USD 133/179), substantially lower than the 135 percent for flour in the first spike. There were seven cases of the transmission exceeding 100 percent and four cases between 50 percent and 100 percent (Figure 3). The price changes in the LC terms were lower on average for the sample by about 10 percentage points than in United States Dollar terms.

And lastly, as with wheat grain, domestic prices did not continue to rise strongly after the peak in the world price in February 2011.

Maize

The first spike, July 2007 to June 2008

In this spike, the world maize prices (US #2 yellow) rose from USD 146/tonne in July 2007 to USD 281/tonne in June 2008, an increase of USD 135/tonne (92 percent). For domestic prices, the average change for 29 series was USD 146/tonne (adding two more months as above) and thus a transmission rate of 108 percent (USD 146/135). Figure 4 shows the variations for the 29 countries. For seven countries, the transmission rate exceeded 200 percent (Benin, Ethiopia, Malawi, the Niger, Nigeria, Peru and Togo) and for the other four the rate was between 100 percent and 200 percent (Cameroon, Chad, Kenya and Mozambique). Note a caveat mentioned earlier: for many countries in Africa in particular, studies on market integration have noted very weak price transmissions in the case of maize, explained mainly by small volumes traded and thus the dominant role played by domestic factors. The price rises for the African countries are unusually high and require in-depth analyses of the underlying reasons. It is also possible that there are problems with the domestic price data in some cases. Price changes in the LC terms are mostly lower but not by that much. Finally, by region, price transmission was 165 percent on average for 16 countries

Figure 4: Maize transmission - first spike

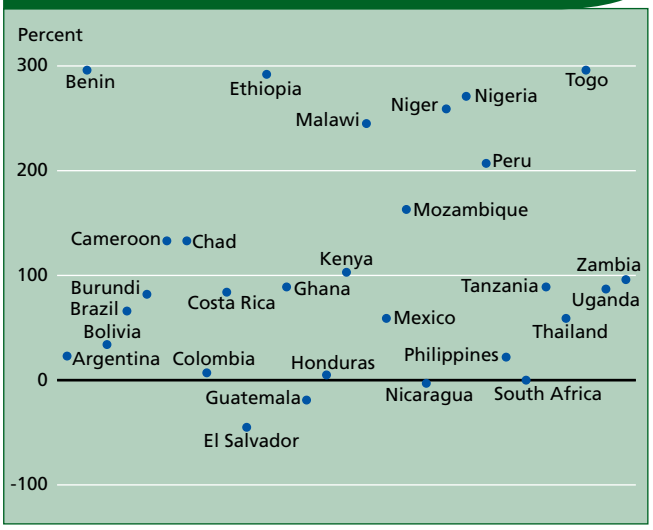
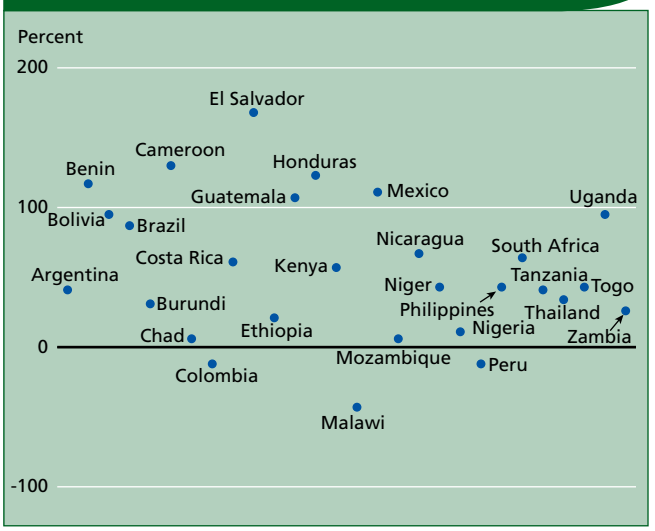


Figure 5: Maize transmission - second spike



in Africa, but only 62 percent on average for the 11 countries from Latin America.

The second spike, June 2010 to April 2011

In this period, world maize prices increased even more than those mentioned above, from USD 152/tonne to USD 314 or by USD 162/tonne. The domestic prices in 28 countries rose on average from USD 348/tonne to USD 438/tonne, or by USD 90/tonne, giving a transmission rate of 56 percent (USD 90/162). Figure 5 shows the variations. For six of them, the transmission exceeded 100 percent (Benin, Cameroon, El Salvador, Guatemala, Honduras, and Mexico), and was between 50 percent and 100 percent for the other seven. Price changes in the LC terms were lower than in the United States Dollar terms in 21 cases.

Summary

This review of price transmission for three cereals was based on 155 price series for 52 countries. The context was the spikes in the global cereal markets since mid-2007, although not necessarily inferring about market integration and price transmission, which will require a more sophisticated econometric analysis. On the whole, domestic prices rose significantly during the periods corresponding to the spikes in the world markets. Taking into account all 155 price series for both periods, domestic prices rose by more than the change in the world markets (over 100 percent transmission rate) in 48 of the 155 series, with transmissions of between 50 percent and 100 percent in 50 cases, and transmissions of less than 50 percent in 57 cases. The transmission rates were significantly lower during the second spike (2010/11). One obvious reason for this was increased food production in 2009, and most likely larger stocks moving into 2010. Better preparedness following the experience of 2007/08 might also have led to lower transmissions. With so many instances of transmissions exceeding 100 percent, and even 200 percent in many cases, these episodes deserve more focussed research with a view to understanding the role of policy and non-policy (e.g. weather) factors in exacerbating the transmission, or in moderating the price rises. Econometric analysis of market integration and price transmission should also be on the agenda. Lastly, learning best practices on policy from the 2007–11 experiences across the world is one way to prepare better for future spikes.

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