



Agricultural Market Information System



# ENHANCING MARKET TRANSPARENCY



# 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,

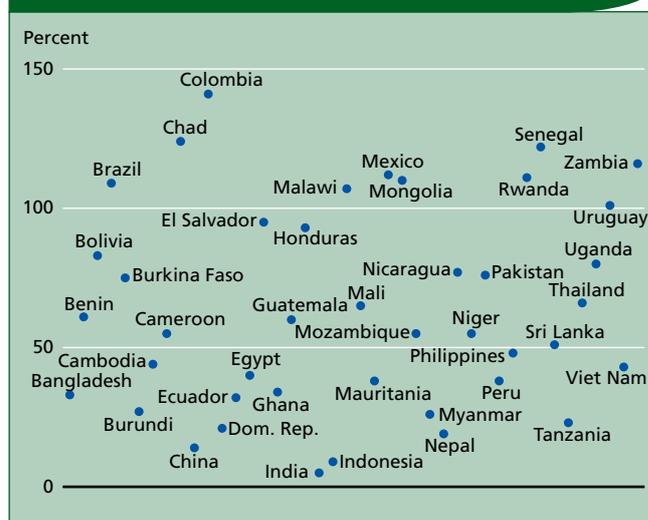
wheat and maize; and two in 2010/11 consisting of one each for wheat and maize. The domestic data show that for most countries cereal prices did not stop rising when the spike ended in the world markets but continued to rise strongly for two to three months more, reflecting lagged transmissions. For 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

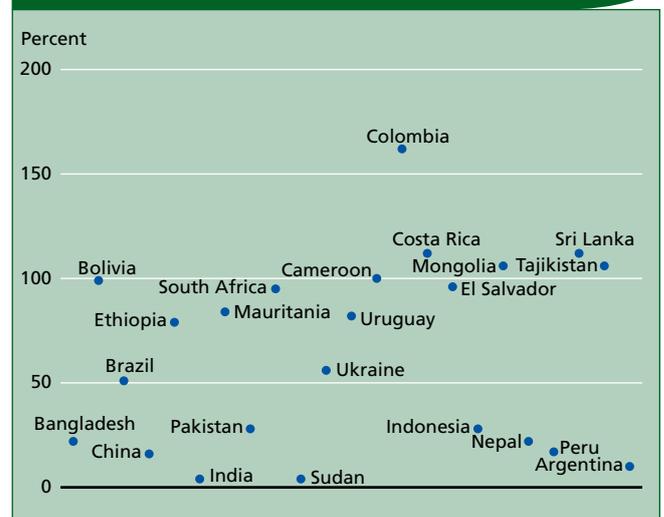
In this period, the world price (US #2 Hard Red Winter) increased from USD 203/tonne in May 2007 to USD 482/tonne by March 2008, a rise of USD 279/tonne (or 137 percent). Corresponding to this spike, and adding two more months for the domestic series, the average change in the price of *wheat grain* 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

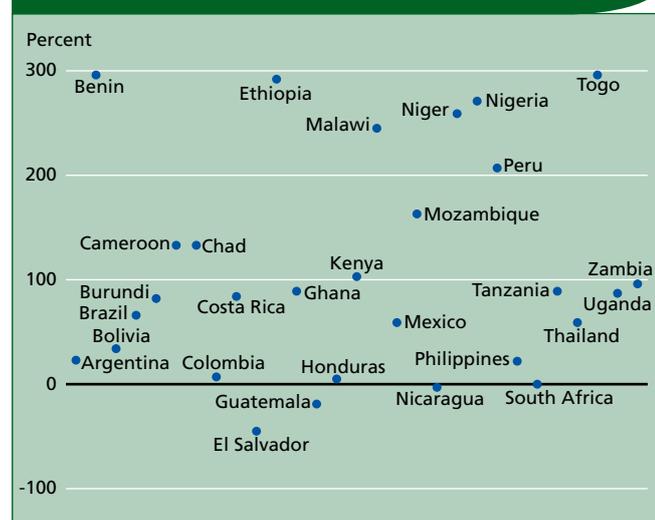
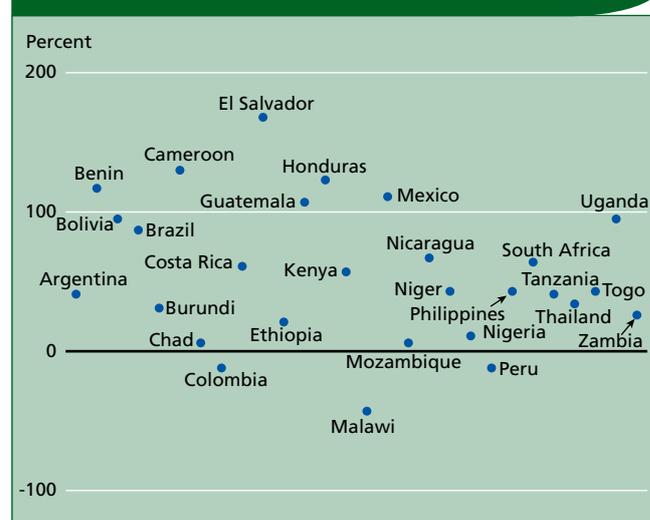


Figure 5: Maize transmission - second spike



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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