



June 4, 2008

Worldwide food crisis: Fears of a famine are overstated Prices could remain high, however

The euphoria seen in the commodity market for the past few years has taken a dramatic turn these past few months since soaring grain prices are fuelling fears of a worldwide famine and major social upheavals. Demonstrations to protest against surging food prices have taken place in many developing countries, one of which even led to the resignation of the prime minister of Haiti. A major international conference is being held in Rome to find solutions to the crisis. Rising grain prices do not affect consumers in richer countries to the same extent given the lighter weighting of staple foods in consumers' overall budgets. This is, however, yet another issue to add to record gas prices and the growing worry over how far overall inflation will rise.

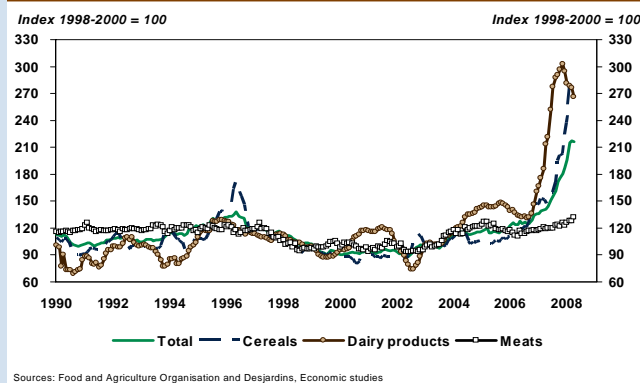
How did we get to this point? It is hard to believe that modern farming, which has made giant leaps in the last decades, is no longer able to meet the demand. However, we cannot deny that the surge in food prices over the past few years has been indeed impressive.

According to the Food and Agricultural Organization of the United Nations (FAO), worldwide food prices have jumped by 85% since January 2005 (graph 1). This surge in food prices is one of the main reasons for the increased inflation pressures seen all over the world. Besides dairy products, the price of grains – a major food source for a large portion of the world's population – oils and fats have risen sharply.

Several factors are behind the sharp and sudden rise of grain prices: increased demand from the ethanol industry and from emerging countries, unfavourable weather conditions, inadequate agricultural policies, speculation, rising production costs, etc.

In this *Economic Viewpoint*, we will try to identify the factors that are directly responsible for the recent surge in major grain prices and examine the possibility of a worldwide food shortage.

Graph 1 – The upsurge in food prices is impressive



INTERNATIONAL GRAIN MARKET

Our research is limited to the four most important grains: rice, wheat, corn and soybeans¹. The price of a specific good should reflect the conditions of supply and demand. One of the

¹ While soybeans are an oilseed, for this study we will refer to soybeans as a grain, since it is seen as a substitute for wheat and corn by producers and some users. Soybeans are becoming increasingly important in financial markets and food markets internationally.

difficulties when dealing with agricultural products is that markets are often highly segmented and prices in several countries are often distorted by national politics. We used the prices that best represent, in our opinion, the situation on international markets, i.e. the reference price in the U.S. for wheat, corn and soybeans and the price of rice from Thailand.

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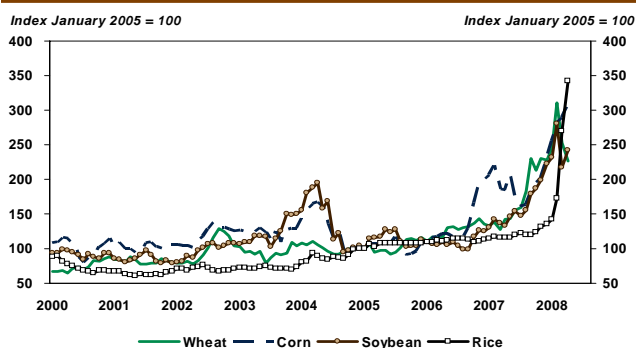
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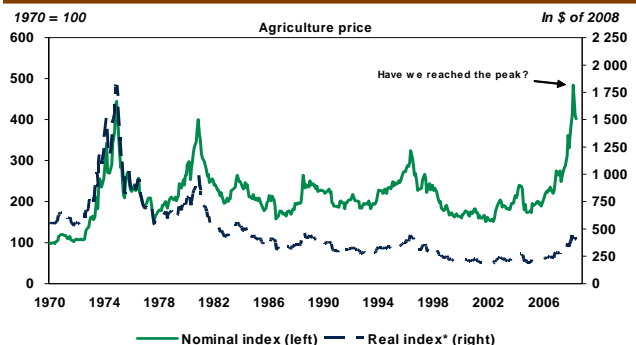
Prices for these four grains have more than doubled in the last few years (graph 2). Corn prices were the first to rise, followed by wheat and soybeans and more recently, rice. This period of rising prices followed a long period where food prices had become increasingly affordable. In real terms, food prices remain well below the price levels seen in the 70s (graph 3).

Graph 2 – Grain prices have more than doubled in the past few years



Sources: Datastream and Desjardins, Economic studies

Graph 3 – Price of agricultural products still relatively low in real terms



* Deflated by the U.S. CPI.
Sources: Datastream and Desjardins, Economic studies

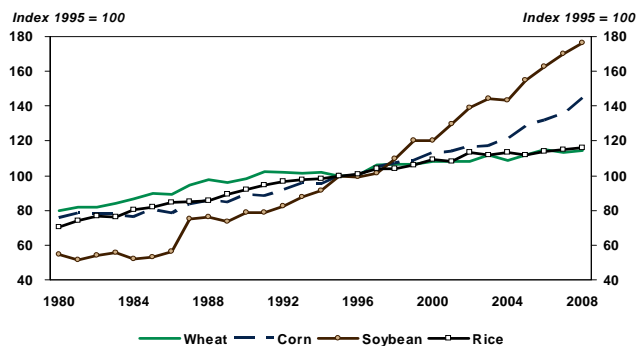
CONSUMPTION

First of all, let's see if increased consumption is behind these surging prices (graph 4). For wheat and rice, worldwide consumption has grown quite moderately over the past few years, and does not vary widely from the slightly upward long-term trend which stems mostly from population increases².

Consumption of corn and soybeans has, however, soared over the past few years. For corn, this jump is mainly explained by the rapid development of ethanol production. In 2003, about 10% of U.S. corn production was dedicated to ethanol. Today, that number is closer to 30%. While it is true that on a global

² Recent price surges cannot be attributed to demographic pressures since the pace of population growth has slowed in the past few decades.

Graph 4 – Worldwide demand for grains

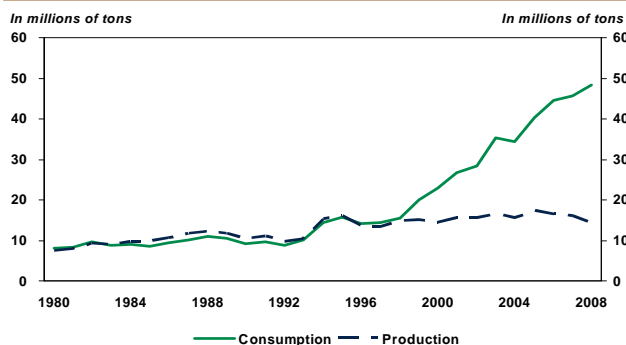


Sources: U.S. Department of Agriculture and Desjardins, Economic studies

scale, the amount of farmland dedicated to ethanol production is still very low, the marginal impact on prices has been significant since almost all the increases in corn production have gone into producing ethanol.

Demand for soybeans has also grown due to increased production of biodiesel fuel. Estimates are that nearly 15% of soybean production in the U.S. is used to produce fuel. However, we have also noted strong increases in soybean consumption in the form of vegetable oil and food for livestock. Of particular note is that demand for soybeans is constantly on the rise in China where national production is at a standstill (graph 5).

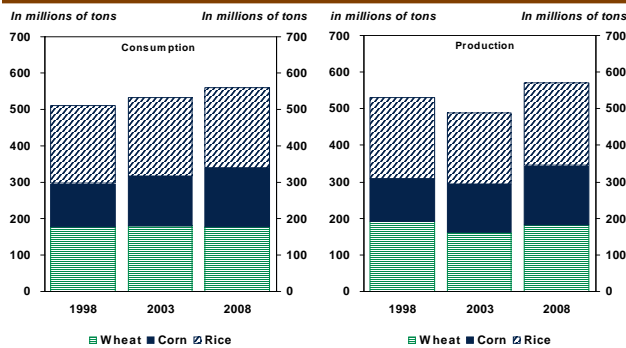
Graph 5 – China has to import increasing amounts of soybeans



Sources: U.S. Department of Agriculture and Desjardins, Economic studies

This is the only case where we can blame changing food habits in emerging countries (in favour of protein-rich foods) for the price increases³. For the other grains, production in China and India is sufficient to meet their domestic needs (graph 6).

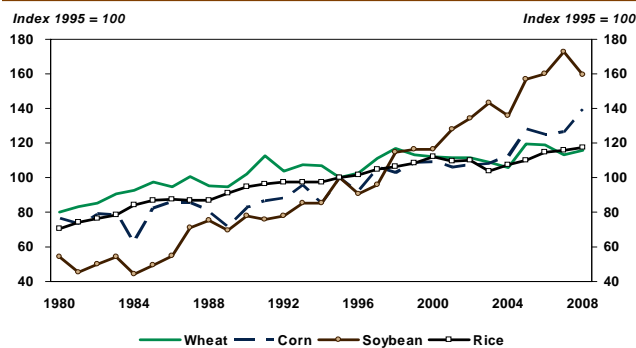
³ Approximately four pounds of grain are needed for animal feed to produce one pound of meat.

Graph 6 – Grain production in China and India meets their demand

Sources: U.S. Department of Agriculture and Desjardins, Economic studies

PRODUCTION

Grain production is far more volatile than consumption (graph 7) since production is largely influenced by climate conditions and farmers modifying their seeding based on prices. The jump in corn prices in 2006 led to an increase in corn production in 2007 and a decline in wheat and soybean production. The opposite took place this year.

Graph 7 – Worldwide grain supply

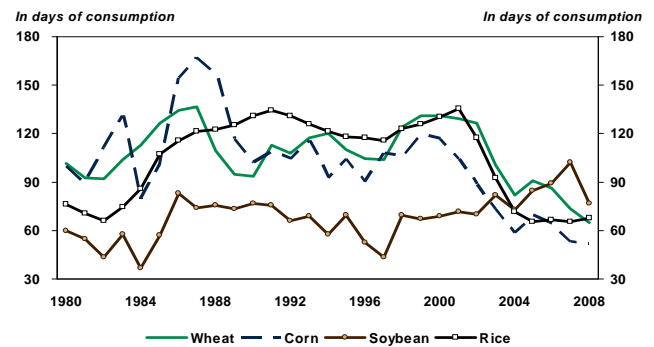
Sources: U.S. Department of Agriculture and Desjardins, Economic studies

Weak grain prices at the start of the decade and unfavourable climate conditions have limited growth in worldwide production since the start of the 21st century. The drought that has affected Australia for the past six years has had a particularly significant impact. In this dry climate, Australian farmers almost dropped rice production completely to take up wine instead. The wheat yield in Australia was also reduced by 50% in 2006 and 2007.

Beyond the annual variations, grain production followed a trend quite similar to consumption: weak increase for rice and wheat and a much sharper hike for corn and soybeans. This development is a good reflection of the capacity of farm producers to adjust to changes in demand for their products.

INVENTORIES

The supply and demand for different grains have evolved in different ways over the past few years. The results however have been the same for rice, wheat and corn. Worldwide inventories melted away, falling from highly comfortable levels as the year 2000 unfolded to low points not seen in more than 20 years (graph 8). In the case of rice, the lowest inventory level was reached in 2005, with a slight upturn noted since then.

Graph 8 – Worldwide grain inventories

Sources: U.S. Department of Agriculture and Desjardins, Economic studies

In terms of economic efficiency, the initial drop in inventories was a good thing. However, the decline was then exacerbated by a quick spike in demand for certain grains and by climate conditions, especially in 2006 and 2007 when many producing countries were affected by drought.

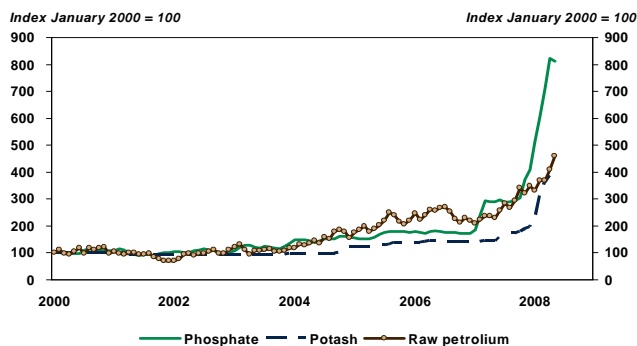
Soybean inventories increased until the end of the 2006-2007 season when producers were more than able to meet the rapidly rising demand. During the last harvest however, high corn prices incited farmers to reduce soybean production, causing soybean reserves to plummet. The root source of the soaring prices for these four grains is now quite clear: the drastic decline in inventories made them a rarity, and even led to speculation and worries about a shortage.

RISING PRODUCTION AND TRANSPORTATION COSTS

Another factor in explaining the rise in grain prices is rising production costs. Surging oil prices are reflected in farmers' fuel expenses and on the costs of transporting grain. The price of fertilizer has shot up even more spectacularly than gas prices have (graph 9). The United States Department of Agriculture (USDA) calculated that, for the first four months of 2008, fertilizer prices have increased by 67% year-over-year, while gas prices have gone up 43%.

While by no means insignificant, increased production costs do not solely justify the spectacular price increases of the

Graph 9 – Fertilizer prices rising spectacularly as well



Sources: Datastream and Desjardins, Economic studies

past few years⁴. This is, however, an aggravating factor that could have lasting effects, especially if we try to quickly increase farm production worldwide in the coming years.

PANIC AND SPECULATION HAVE WORSENEDED THE SITUATION

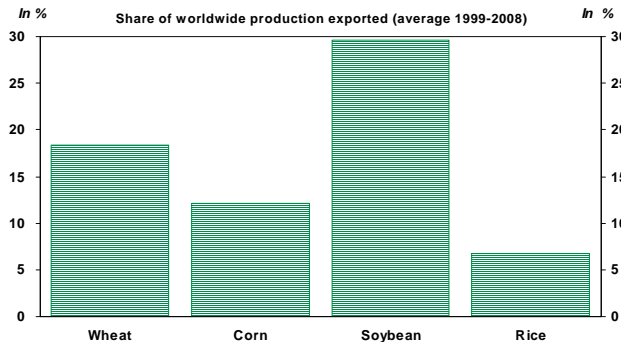
The factors discussed above can only partly explain the jump in grain prices. The upward trend seems to have been amplified by investors' speculation and the panic-fuelled reaction of the population and several governments. Based on the media coverage, you could think we are on the verge of a global famine. It is then understandable that prices shot up to levels reflecting an actual food shortages. The reality is that, while worldwide inventories are indeed weak, grains remain available almost everywhere around the world, albeit at high prices.

One of the most harmful measures taken by producing countries were to have restricted the export of grains or banned exports outright. We can understand the need of governments to make sure their local supply is sufficient, but these measures limit the supply on the international market, which only pumps up prices further. Export barriers had a particular impact on rice prices. Since this grain is not heavily traded on the international market (graph 10), cuts to exports since the fall from a few countries like India, Vietnam and Cambodia, among others, have put importing countries in a very difficult position. This prompted prices to rise even though worldwide production slightly exceeded consumption.

Other governmental measures could have harmful effects over the long term. Most notably, price controls on food in several countries prevent farmers from fully benefiting from recent price increases, which threatens to limit supply. While not much of a concern at the moment, we also have to keep an eye on the free distribution of imported food which could

⁴ The World Bank estimates that about 15% of the recent price increases are tied directly to rising energy and fertilizer costs.

Graph 10 – Rice trades lightly on international markets

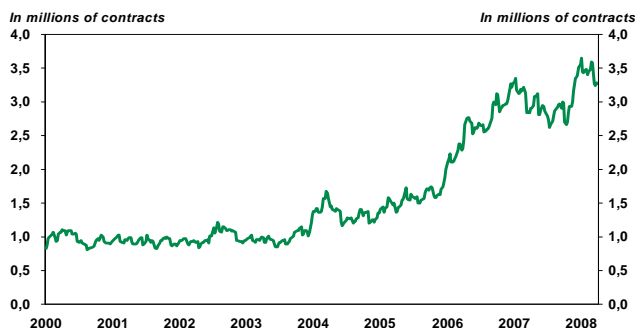


Sources: U.S. Department of Agriculture and Desjardins, Economic studies

discourage local production. The World Bank and the Organization for Economic Cooperation and Development (OECD) instead recommended increasing financial aid to the populations most heavily affected by rising food prices. Reducing taxes on imported foods is another quick and efficient way to limit food inflation. Some countries, including China and Mexico, have already announced that they will be reducing tariffs.

Governmental measures that reduce the supply of grains are welcomed by speculators who are betting on a shortage. As is often the case, the excellent financial performance of the commodity market these past few years has incited more investors to join the party and take long positions on several staple foods. As such, the number of derivative products traded on grains has more than doubled over the past few years (graph 11), and speculators are responsible for about half of this activity. In addition to the financial speculation, several people have started to stockpile large quantities of grains as a protective measure against a possible shortage or to resell at a profit. This type of speculation is more widespread in countries where price controls have been imposed by the government.

Graph 11 – The number of grain derivative products has exploded in the past few years

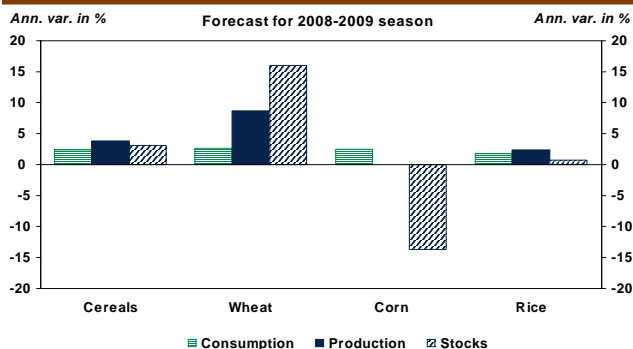


Sources: Bloomberg and Desjardins, Economic studies

THE SITUATION IS GETTING BETTER

Unfortunately for speculators and those howling about the coming calamity, the global grains market appears to be improving. Farmers have started to react to rising prices by increasing their production. This coupled with the relatively favourable weather conditions we have seen to date should translate into much larger yields for the 2008-2009 season. The FAO predicts that worldwide grain production will rise by nearly 4% during the next harvest (graph 12). With the exception of corn, grain inventories should move up again⁵

Graph 12 – Except for corn, grain inventories should rise following the next crop



Sources: Food and Agriculture Organisation and Desjardins, Economic studies

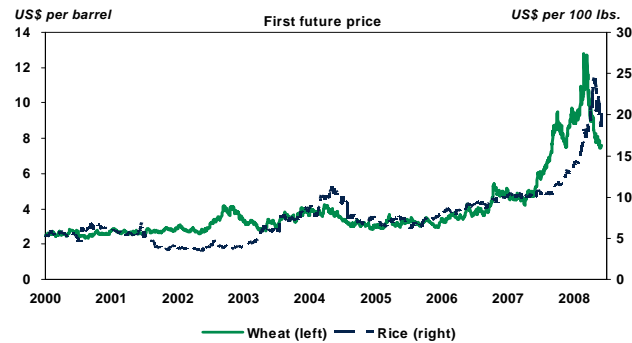
Wheat will record the most striking improvement with both the FAO and USDA anticipating worldwide production to grow by more than 8% to a record level. The financial markets are starting to take note of this reversal of fortune and wheat prices have plummeted almost 40% in the past few weeks. The reaction of rice producers is also encouraging, with worldwide production expected to grow by a little over 2% — more than enough to meet demand. Future contracts on rice also show a substantial drop in prices (graph 13), a trend that could take hold now that Vietnam and Cambodia are preparing to lift their export barriers.

The next season should be less favourable for corn, which explains why the price of corn keeps rising. However, the unchanged production mainly reflects the decision of U.S. farmers to favour grains (wheat and soybeans) that saw their prices rise more quickly in 2007. If the current price trend continues, corn production will probably rebound in the coming years.

The most important thing is that farmers have the potential to substantially increase the production of all grains. Until these recent price increases, the global agricultural market was

⁵ Forecasts on soybeans are not yet available; however, the 20% thrust in U.S. production means that inventories should rise.

Graph 13 – Futures markets show wheat and rice prices are starting to correct



Sources: Bloomberg and Desjardins, Economic studies

marked by very weak prices that discouraged increases in production, especially in developing countries where farmers could not compete with hugely subsidized exports from rich countries. Several measures, like quotas for instance, were implemented specifically to limit growing farm production and to prevent surpluses. For grains, the governments of Europe even paid their farmers to let major swaths of their farmland lay fallow. This policy could be softened to respond to the increased demand.

In the very short term, the rich countries seem to be in a better position to increase their grain production rapidly (except for rice), but with a long-term view, the rest of the planet could also increase its yields substantially. The quantity of farmland that is currently unused is impressive, especially in Brazil, in the U.S. and in Russia^{6,7}. Bigger yields in the farmlands being used today hold even more promise. The weak prices observed over the past few decades slowed down research and held up the implementation of new techniques to increase efficiency in farming. In a context where high prices dominate, the incentive is there to motivate farmers across the globe to roll up their sleeves and do what it takes to improve productivity. The current price hikes represent the perfect opportunity to kick-start farming in developing countries where farm yields are often a fraction of what they could be.

Vietnam's experience could serve as an example. From a country on the brink of a famine in the mid 80s, Vietnam has become one of the world's main rice exporters by replacing its old collective agricultural system with a far more liberal model that allows farmers to profit from price hikes on the international market.

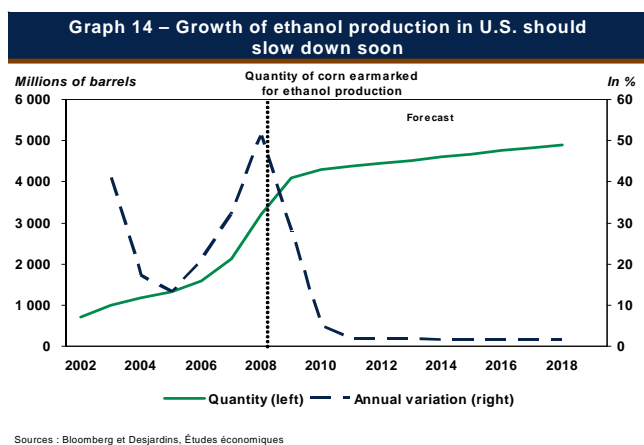
⁶ The Deutsche Bank estimate that only 40% of all potential farmland was being used for farming in 2005.

⁷ An expert in the Financial Post, Richard Ferguson, estimated that grain production in Russia could be quadrupled in the next few years simply by using neglected farmland and better production methods.

CONCLUSION

The surge in grain prices seems to stem from the rapid acceleration in the demand for certain grains, especially following the explosion in biofuel production, while weak prices over the past few decades and unfavourable weather restricted grain production. The resulting drop in inventories fuelled speculation and stoked the fears of a famine such that several governments implemented disastrous measures that only accentuated further price increases, especially in the case of rice.

Faced with this delicate situation, observers were highly critical of the ethanol industry, with some calling for an outright ban on this product. Without actually taking a stand on the economic or ecologic legitimacy of ethanol, it appears to us that the problem appears to be the breakneck speed with which production has been ramped up (with the support of generous subsidies and soaring oil prices). Fortunately, the pace of ethanol production is expected to slow down soon (graph 14).



Since we believe that grain production could be increased substantially in the coming years, using a fraction of the yields for industrial purposes does not appear to us to warrant an outright ban. For example, ethanol development in Brazil, which is based on cane sugar, seems to have reduced Brazil's dependence on hydrocarbons without incurring too many negative consequences.

The good news is that nothing suggests that we are heading towards a worldwide famine, since farmers across the globe have all the resources they need to increase their yields quickly in the coming years. The significant increase in production forecast for the next harvest has already led to a correction in wheat prices. The price of rice seems to be following this same trend.

However, demand for corn and soybeans will continue to grow quickly. This, coupled with increased farming and

transportation costs, means that grain prices will remain relatively high for the foreseeable future. A growing proportion of farmland will be used specifically for corn and soybeans, which will support other grain prices. Incidentally, if the major thrust of grain price increases is already behind us, the price of meat could increase sharply in the coming quarters. We therefore cannot expect any quick relapse in food prices. As is the case with oil, the effect of rising food costs on inflation in industrialized countries should fall gradually since the pass-through effect on other prices seems to be limited⁸. For the moment, Canada is one of the only countries where price increases on food remain relatively weak. According to Bank of Canada Governor Mark Carney, «We are an exception, as a result of the strong Canadian dollar, fierce competition at the retail level and a surplus of meat. These combined effects are temporary.»

While in real terms the price of food is still below the peaks reached in the 70s, adjusting to rapidly rising prices is no easy task for the most vulnerable populations. We have to pay tribute to the governments and organizations who have already announced international aid to help them through this difficult period. The results of high prices have not all been negative – they have handed the world a golden opportunity to kick-start agriculture in developing countries and perhaps even improve farming on an international level, which is too often distorted by national politics.

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⁸ See the *Economic Viewpoint* entitled «Should the surge in oil and food prices prompt the U.S. Federal Reserve to target total inflation?» May 27, 2008

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