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## STAFF WORKING PAPER

### **Subject: Issues paper on high food prices**

After a steady increase in 2006 and in the first semester of 2007, the prices of many agricultural commodities reached exceptional levels since summer 2007. Increases in EU market prices in February 2008 against the same month in 2007 were of the following order of magnitude: 84% for wheat, 28% for maize, 63% for rapeseed oil, 30% for milk and 35% for cheese.

However, price hikes are a normal feature of commodity, including agricultural markets. The present price surge is the 5<sup>th</sup> such event witnessed in grain markets since the oil crisis of 1973, despite the long-term declining trend of agricultural prices. In fact, recent prices for all major agricultural commodities still remain, in real terms, below their comparative levels of either 1973 or 1979 oil crises.

### **1. THE ORIGINS OF THE PRODUCER PRICE INCREASES**

Reasons for current price pressures are a **combination** of steadily increasing demand and lagging supply or production shortfall, exacerbated by short-term economic and policy factors. It is important to note that the combination of these phenomena varies between sectors (see section on selected commodities under heading 2).

A sector analysis of the main drivers underlying the price increases and their magnitude enables to draw a clear distinction between the following groups of products:

- *Rice and wheat*: the price increases of these two commodities have predominantly been determined by **supply-side factors**. While demand continued increasing at a rather constant pace world production has regularly lagged behind during the most recent years (owing to the significant production shortfall in major suppliers linked to supply shocks and slow yield growth, most notably for wheat). As a result, world stocks stand at significantly low levels, feeding a sharp increase in prices. These supply-side factors have tended to trigger **greater price responses** as rice and wheat have exhibited the most significant price rises.
- *Dairy products*: the reasons behind the substantial prices increases in this sector lie in the limited availability of exports due to **lower production** levels in major exporting countries (mainly Australia and Argentina), whilst demand has steadily increased.

- *Maize and soybean*: maize and soybean markets have been mainly driven by a **strong growth in global demand** both for meat consumption (through feed use) and for industrial (bio-fuel) use. In spite of a significant supply response, world stocks of these two commodities have declined, thus leading to price increases, although to a much lower degree than for rice and wheat.

Growing **demand** for agricultural commodities is often attributed to emerging economies and the need for bio-fuel feedstocks. The evolution of demand over the last decade has been regular without sharp annual declines or increases. For example, despite declining per capita consumption and diet diversifications, total demand for grains has progressively increased due to population growth.

On the other hand, reduction in **supply** can occur more suddenly. Lagging supply of some of the commodities is due to weather related conditions and slowing increases in yields, the combination of which has resulted in a sudden and sharp decrease of grain production in major exporting countries. With exports concentrated in a relatively small number of countries, small changes in production levels can have major consequences on the markets.

Among the several reasons which are co-responsible for these developments, some are **temporary** while others are of a **structural nature**. Together, they have already caused prices before the summer 2007 to reach firmer levels than those observed for more than a decade. The central issue is to try to establish what is structural and what is temporary, as well as their relative importance.

**Structural** factors include:

- Firstly, growth in world food grain **yields** (including those in the EU) has been slowing down. The trend is particularly striking in the case of wheat and rice due to lack of investment and their exposure to weather conditions. Such developments have the potential to increasingly constrain the capacity of the agricultural sector to meet a rising domestic and global demand. On the other hand, due to widespread investment in maize (mainly on GMOs), maize yields have followed an increasing trend;
- Secondly, the difficulty of some major producing/exporting countries to keep pace with demand growth: this seems to be linked globally to lack of public **research** in agriculture (notably in seed improvement), to the rise in **production costs** and the declining **profitability** of the agricultural sector. This difficulty may also be associated with more constraining environmental legislation in some countries (at least in the EU);
- Thirdly, the steady rise in global commodity **demand** driven by record economic growth rates, urbanisation and changes in dietary patterns (notably for meat) in many parts of the world (Asia and Latin America);
- Fourthly, the emergence of **new market outlets** such as the biofuels market (box 1). This is particularly striking in the US where this market is estimated to absorb currently around 25 %<sup>1</sup> of US maize production and an even greater share in future. By contrast, in the EU, biofuels only use approximately 1% of EU cereals production for bio-ethanol production;

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<sup>1</sup> Estimate for the 2007/08 marketing year, US Food and Agricultural Policy Research Institute (FAPRI), January 2008.

- Finally, the characteristics of agricultural commodity markets: contrary to most commodity markets (like those for metals or oil) which have also recently shown similar developments, the impact on agricultural prices is amplified by the **seasonality** that characterizes agricultural production and which often limits its capacity for short-term adjustment as compared to other industrial sectors. World markets are generally (and potentially increasingly) **thin** markets (16% of world wheat production is traded vs. 8% for dairy products; 7% for rice) and generally in the hands of a small number of exporting countries (cf. FAPRI/OECD baseline projections).

Besides these structural factors, which were largely anticipated in the outlook forecasts of international organisations and in DG AGRI publications about the medium-term prospects in July 2007, the agricultural sector has been hit **over the most recent months** by:

- A series of adverse **climatic** conditions in many producing and exporting regions. The continuation of a very significant drought in Australia, a heat wave in central and eastern Europe as well as very low temperatures in Ukraine and Russia considerably affected the level of crop production in these countries;
- The very low levels in world cereal **stocks**, in particular in the main exporting countries (EU and US stocks cannot anymore constitute a buffer against sharp changes at production level) as well as in countries historically in possession of large stocks (China and India);
- The price rise in the **energy** markets which have direct (through production costs) and indirect (through biofuel markets) impacts on the agricultural commodity markets. These developments are also linked to the dramatic fall in the value of the **US dollar** which amplifies the rise in commodity prices expressed in US dollar terms;
- The growth in activity of **investment funds** in commodity derivative markets driven by the fall in stock markets and easier access to commodity markets (contract design, margin calls, commodity index funds etc.). They appear to mainly have taken a long position, thus exacerbating the rise in commodity prices. (cf. box 2)

The combination of these structural and short-term factors has generated extremely tight market conditions. The impact on prices has been further exacerbated by **the restrictive trade policy of some key exporting countries** (in sectors such as wheat, rice, meat and/or in many countries, from Russia to Egypt, Vietnam and Argentina), which led to what can be considered as extremely nervous markets with prices at exceptional levels.

As regards the EU, the successive reforms of the CAP have certainly contributed to the reduction of public stocks in the EU and to short-term production adjustments in some sectors (e.g. durum wheat and milk). At the same time, they made agriculture more competitive and enhanced market orientation as market prices are better drivers than intervention prices.

### **Box 1 Bio-fuels**

The US expansion of ethanol production, because of its speed and magnitude, has induced significant market changes. US domestic cereal supply has shown its potential to fulfil the new demand together with feed and exports. Nevertheless, additional area for maize has led to the displacement of soybean, reducing significantly US production and the supply to the global market. US and global oilseed supply are however expected to adjust quickly to the new situation.

Because of its very limited quantity EU ethanol production has not had any significant effect on cereal market prices. As regards vegetable oils, with the exception of rapeseed, the share of demand for biodiesel in the global vegetable oil market is rather small. This suggests that biodiesel has so far had a relatively minor influence in the recent increase in their prices, as compared to other driving factors. Moreover, the more gradual approach of the EU policy will give time for supply to adjust and avoid impacts on food production.

Further analysis on the impact of bio-fuels can be found in the commodity sections under 2).

### **Box 2 Funds**

Abundance of international liquidity coupled with a slowdown on financial markets has drawn a large amount of investment capital into agricultural commodities exchanges. Investors not active in the underlying commodity markets (as farmers and producers would be) are not present on the futures markets for price discovery or hedging, and are often suspected of disturbing futures markets and its linkages with underlying cash markets. Non-traditional investors seeking portfolio diversification take long positions and their actions can be anticipated. By contrast, actions of those seeking profit depend on their relative profit opportunities and are unpredictable. Data from the Commodity Futures Trading Commission indicate that between 2005 and 2008 the share of investment capital of the activity in the maize, wheat and soybean futures has considerably grown, and consistently with the expectation of portfolio diversification, non-traditional traders shifted from net short to net long positions.

Not every commodity investment by non-traditional traders has a speculative motive. Investors have a role in ensuring sufficient risk-taking capacity. Nevertheless, long positions taken on the futures markets might reinforce the notion of nervous and volatile markets in the current environment of tight stocks. In brief, the greater volume of funds activity on agricultural commodity markets appears to have amplified price fluctuations.

## **2. THE MAGNITUDE OF THE RECENT INCREASE AND PROSPECTS FOR THE FUTURE: A SECTORAL ANALYSIS**

Figure 1 indicates long-term developments in international prices for rice, maize and wheat in **nominal dollars**. Considering again changes in February 2008 compared to the same month in 2007, it appears that increases are more substantial than on the EU market. The price of US wheat rose by 113% and that of US soybeans by 83%. The increment for US maize (+24%) was somewhat lower than for EU. The reference price for rice (FOB Bangkok) was 52% higher in February 2008 than one year earlier, reaching 450 US dollar/tonne. Since then, it has further soared, going beyond 1000 US dollar/tonne. As to dairy products, prices more than doubled between the end of 2006 and the end of 2007 and came down since then. Price hikes and volatility are normal features of commodity markets, including for agriculture, as shown in Figure 1. When considering current prices, it appears that wheat and maize prices have recently (2007/08) exceeded the historically high levels during the time of the oil shock of the 1970s. However, the picture is somewhat different when considering prices in real terms.

**Figure 1 International prices for crops, in current US dollars**

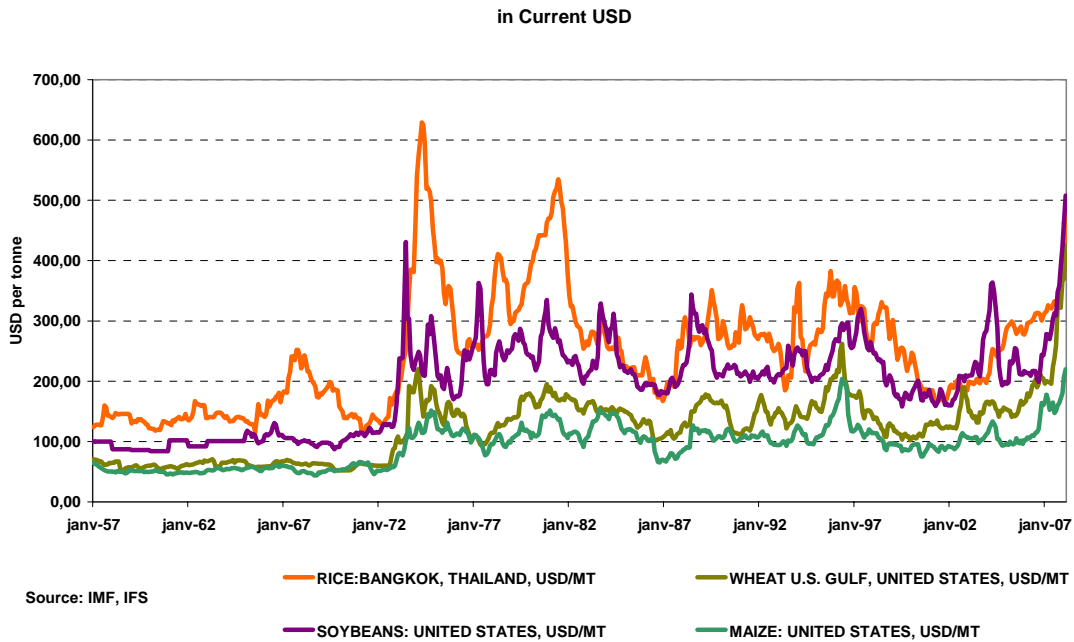
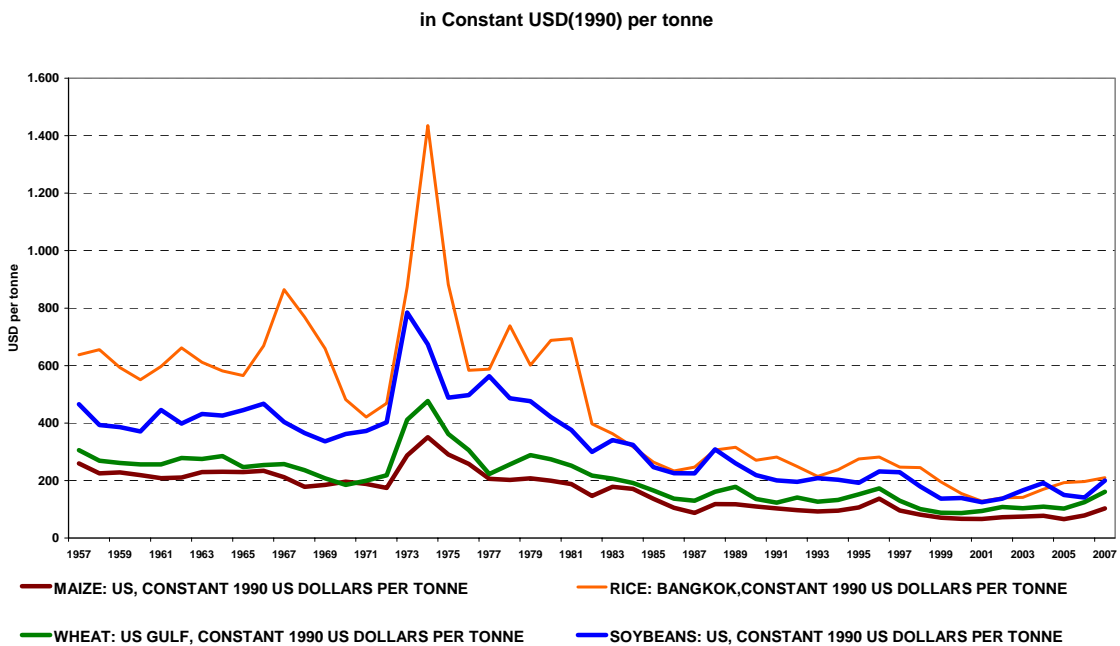


Figure 2 shows the long term declining trend in agricultural prices, in **real terms**. In fact recent prices for all major crops are, in real terms, below their comparative levels of either 1973 or 1979 oil crises. Given the rate of inflation between the sixties and today, the recent surges in prices are flattened compared to the past peaks. This should nevertheless not understate the problem caused by current high food prices with respect to poverty and inflation.

**Figure 2 International prices for crops, in constant US dollars**



The very rapid and dramatic increase in world agricultural prices has made its impact felt in a rather extensive list of other **interrelated** areas all the way to the final consumer. Yet the causality attributed to the "food crisis" generates one paradox: the largest increases in agricultural prices are observed in the wheat and rice markets where the two major causes that are commonly used in the press to explain the recent price increases (demand for bio-fuels and demand in China/India) have had the smallest impact.

The degree by which each factor explains increases in prices varies a lot by commodity and by region. For rice and wheat, supply-side factors - both in terms of unfavourable climate conditions and lower yields growth - are the main causes. As to maize and soya, strong demand for bio-fuels and increasing imports in China explain most of the prices rises. In both cases, the record low levels of global stocks over the last decade have exacerbated the effects on market prices.

The present section provides an overview of the factors and the magnitude of price increase over recent years for the main agricultural commodities and players. It also includes a summary of prospects, based on the outlook established by leading forecasting bodies<sup>2</sup>.

## 2.1. Recent developments

### 2.1.1. Food grains – recent supply shocks but slow demand growth

World **wheat** production has stayed below world consumption in wheat during the last 6 years. This development is not due to unforeseen changes in demand, which has continued increasing at a rather constant pace (while the combined consumption of China and India even declined since 2000) but to the significant **production shortfall in major suppliers** (with for example Australia facing 3 severe droughts in the last 6 years and poor harvest in the EU). As a result, world stock declined significantly during the same period, thus contributing to the increase in prices.

World **rice** production and consumption of rice increased at a similar, slow pace during the 1995-07 period. There has been no recent market shock explaining the price hike. Population and economic growth remain strong in the main consuming countries, but while consumption is growing in some (Vietnam, Philippines, India), it is declining in others (China, Thailand). The significant **supply shock** in the rice market, due to the poor harvests in India (2002) and China (2003) has had an impact then in the level of stocks by 2004, but stocks have remained stable at these lower levels during the last 4 years. Production has also recovered to meet consumption growth. Current extremely high levels are thus difficult to explain by rice market developments, and seem to be affected more by the overall commodity price boom and export bans that accentuate price variability in a very thin market (only 7% of rice is traded).

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<sup>2</sup> The current analysis is mainly based on the 2008 Outlook of the Food and Agricultural Policy Research Institute (FAPRI). The latter includes the impact of the 2007 US Energy Independence and Security Act. The FAPRI figures should be taken with caution as there may be problems of data reliability (especially for China and the EU-27). The OECD-FAO outlook was not yet publicly released by the time of finalisation of this note.

### *2.1.2. Maize and oilseeds – the impact from bio-fuel demand*

In **maize**, an **acceleration of world consumption** is evident since 2003, mainly driven by the increased use of maize for ethanol in the US and increasing maize imports in developing countries, mainly China and Mexico. The subsequent price increase led to a strong supply response in the US, China, Brazil and Argentina, and production seems to be recovering. Trade has not been affected much, with the US even exporting more maize (at the expense of much lower stocks). But most of the impact has been felt in the rapid decline of stocks, which have reached levels that leave no space for additional shocks. Among the main players, US exports have been increasing over time, and have not been influenced by the increased use for ethanol. From the other exporters, only recently have Brazil and Argentina responded to world demand, while China's exports have been fluctuating on a downward path, depending on whether its annual production met its growing internal demand.

Developments in maize are also linked to developments in the **oilseed complex**, with significant annual variations in the area maize/soybean rotation in the US. This takes place at a time of strong demand coming both from feed use of soybeans and soybean meal in China, and also from strong demand for vegetable oils and palm oil, initially for human consumption but recently also for biodiesel.

**Demand for soybeans**, the dominant crop in the complex, grew very fast, during the 1995-2007 period, but production increased at a similar pace (4.9% in production and 5.0% in consumption). With demand in EU and Japan stable, the rapid increase in Chinese imports has been met by increased export from US, but especially from Brazil and Argentina. In **vegetable oils**, use for EU biodiesel production has turned the EU into a net importer of rapeseed and sunflower oil, thus removing quantities from world trade. Part of the gap has been filled by palm oil, whose production and consumption have also increased significantly in recent years, with total palm oil imports in EU, China and India increasing, but total exports of Malaysia and Indonesia increased faster, and so is production with respect to consumption.

### *2.1.3. Sugar and Cotton – the long-term downward trend continues*

Despite their significance for developing countries, **sugar and cotton have been left out of the price hike**, with their annual price variations following a more traditional path. In **sugar**, developments are dominated by Brazil, where strong production growth, driven partly by ethanol, continues to put downward pressure on world sugar prices even when the EU is gradually withdrawing as an exporter.

In **cotton**, US production has been declining rapidly (by more than a quarter) in recent years, but the US exportable surplus has increased because domestic use declined even faster. As a result, additional demand from China has been met by US cotton exports, and increased Chinese production. India has also increased consumption, but its production kept pace thanks to strong productivity growth in cotton yields.

### *2.1.4. Dairy – production not keeping pace with growing demand*

Production is not keeping pace with growing demand. **Production shortfalls** occurred in main producing and exporting countries. Due to the drought, milk production in Australia dropped by 5% in 2007. Following the implementation of

the 2003 reform, EU milk production decreased by 2% in 2006 and did not recover in 2007. Reductions were more drastic for milk powder, both for production, stocks and exports. Due to production shortfalls, overall stocks have further declined (except for cheese).

#### 2.1.5. *Meats – strong demand, but stronger supply growth*

In **beef**, consumption growth in Russia, China and India is strong, but production response is even stronger in Brazil and Argentina, while other major exporters increase their exports, thus replacing the gap left by declining production in the EU. Thus **growth** in this market does not generate major price pressures, especially because a significant part of the growth in the cattle herd is grass fed.

The growth in **pork** and **poultry** consumption, on the other hand, is stronger, and particularly strong in China. Exporters have in general responded to this growth, and in some cases with a speed that readjusts prices at lower levels. But the price impact is felt in feed costs, which are increasing both because of the general increase in production costs and because of the additional demand for feed (mainly maize and soybean meal).

## 2.2. Prospects

Whilst caution is necessary in asserting that we have entered a new period of strong market prices after two decades of price decreases, it is becoming increasingly clear that **structural factors** like the growth in global food demand **can be reasonably expected to maintain prices at sustained levels over the medium-term, though substantially below the most recent price hikes** (except in the case of maize).

#### 2.2.1. *Rice*

In recent years, world **consumption outpaced production** for three consecutive years (from 2001/02 to 2004/05) and again in 2006/07. As a result, world **stocks** significantly decreased over those years and fell below 20% of uses in 2004. According to FAPRI, stocks would even decline further, falling short of 15% of uses by 2017. Hence **prices** would go on rising. FAPRI estimates that the reference trade price for rice (export price for Thailand, leading exporter) would increase by 64% over the projection period compared to the average for the past decade. It would reach 450 US \$/t by 2017/18. This is less than half the level of prices observed in April 2008. (FAPRI forecast was established before the latest surge in rice export prices).

The continuous decline of stocks is due to the excess of consumption over demand. According to FAPRI, in the next decade, demand (+1%) would still grow somewhat quicker than production (+0.9%).

Rice **trade** has significantly increased since the mid nineties. FAPRI expects that it will grow faster than production. Compared to the average for the last decade, exports are projected to increase by 20% over the next 10 years.

The top-5 net exporters would still account for 90% of trade over the projection period. Within that group, FAPRI expects that Thailand and Pakistan would be able to increase their exports by 40%, Vietnam by one third, while exports for India and the US would remain close to their average for the last decade.

Trade is less concentrated on the import side, with the top-5 net importers only accounting for 30% of world trade. FAPRI expects a significant increase (+50%) for the biggest importing country in Africa, Nigeria. Imports are also projected to rise in Saudi Arabia and in the Philippines (+40%). By contrast imports would decline in Indonesia and Iran.

### 2.2.2. *Wheat*

Forecasts made by FAPRI assume return of normal weather conditions, and thus return to normal **supply** and progressive recovery of depleted **stocks**. Production in major exporting countries (Australia, Canada, EU, and Ukraine) should resume growth. Due to the combined effect of area extension and yield growth, wheat production is projected to increase from 603 million tonnes in 2007/08 to 648.5 million tonnes in 2008/09 and to 687.7 million tonnes in 2017/18.

FAPRI forecasts wheat **consumption** to grow 1.1% annually, reaching 686.6 million tonnes in 2017/18. The forecasted growth rate is somewhat lower for feed uses (+0.7%) than for other uses (food and others –including for bio-fuels). Demand continues to be driven mostly by population growth in Asia, Africa, and Middle East. Per capita consumption in many developed countries continues to be stable with production growing faster than consumption and stronger exports.

Wheat **trade** gradually recovers as supply conditions improve. Overall, net exports of wheat would increase to reach 107 million tonnes by 2017/18. FAPRI forecasts that the traditional Top-5 exporters (USA, Canada, EU, Australia and Argentina) would still account for 80% of world net exports. But the situation of the main players is likely to change. The share of US and Canada is expected to decline over the medium term, Australia should be able to maintain its share (under normal weather conditions), while Russia, Argentina and the EU are projected to gain market share. The figure for the EU needs to be considered with caution. First, there are inconsistencies in FAPRI data for the EU for recent years. Second, their forecasts for EU exports are more optimistic than our own projections.

Wheat **prices** are projected to remain high by historical standards (+75% over the projection period, compared to the average for the past decade). There are uncertainties about policy developments and their impacts on relative profitability of wheat compared to oilseeds might cause further shifts in acreage.

### 2.2.3. *Maize*

The **stocks-to-use** ratio decreased to 13.3% in 2007/08 as consumption increased, mainly because of a demand increase from the ethanol sector. It ends at 13% in 2017/18.

In 2007/08, world maize **area** increased to 157.1 million ha. According to FAPRI, it will continue to increase in the projection period, reaching 163.2 million ha by 2017/18 because of the higher maize demand. **Production** is expected to reach 895.9 million tonnes in 2017/18 because of growth in area and yields. **Consumption** should increase to 771.3 million tonnes in 2008/09, mainly because of the increase in food and industrial use; it should reach 895.6 million tonnes in 2017/18.

Over the next 10 years, maize net **trade** is projected to increase, reaching 107.2 million tonnes in 2017/18 because of demand growth in major importing

regions such as Asia and Latin America. The U.S recaptures its market and its share recovers to 72% in 2017/18.

According to FAPRI, Argentina should increase its production by 7 million tonnes over the next 10 years, while in Brazil it should grow by 8.7 million tonnes, in South Africa - by 0.7 million tonnes by 2017/18. Growth in area and yields will raise Argentine **net exports** of maize by 5.1 million tonnes to 21.1 million tonnes in 2017/18, capturing 19.7% of the market. Brazil's export share should decrease because domestic consumption growth exceeds production growth. South Africa's market share reaches 1.3% in 2017/18.

The largest demand increase for maize comes from Asian countries because of growth in their livestock industry and therefore in feed demand. Asian **net imports** increase by 10.1 million tonnes over the next decade. African net imports decrease slightly with the increase in production. Among Latin American countries, Mexico maintains its role as a major importer, with imports reaching 14.3 million tonnes in 2017/18.

**China becomes a net importer** of maize in 2009/10, with imports reaching 2.6 million tonnes in 2017/18. Growth in the livestock sector increases feed use by 14.4 million tonnes over the next decade. Food and industrial use increases by 8.8 million tonnes over the projection period. Production growth meets only part of this growing demand, as the increase in maize area is limited.

#### 2.2.4. *Soybeans*

Currently, demand is stronger for vegetable oils than for meals. As a result, the increase in **prices** is higher for oil than for meals. As production outpaces demand from livestock sectors around the world, FAPRI expects that meal prices will decline, coming down to 300 USD/tonne by 2017. By contrast, prices of vegetable oil are projected to continue rising, reaching 1600 USD/t by 2017. Prices for soybeans would remain slightly lower than 500 USD/tonne.

World **area** is projected to increase from 91 million hectares to 108 million hectares in 2017/18. Large increases in areas are expected in Argentina, Brazil and to a lesser extent India. Responding to high maize prices, US **production** decreased - as much land was diverted to maize- but it is expected to recover during the projection period as higher prices make soybean production competitive.

US soybean exports declined, but world net **exports** increased due to higher exports from Brazil. This trend is likely to continue: the baseline forecasts an increase in Brazilian exports from 40 million tonnes in 2007/08 to 54 million tonnes in 2017/18. Brazil will become the worlds largest exporter of soybeans, supplying 58% of export demand in 2017/18 (up from 42% in 2007/8) while the share of the US declines (from 36% to 24%). Chinese net imports are forecasted to go on increasing, going beyond 50 million tonnes by 2017, driven by strong demand for protein meal and oil consumption.

### 2.2.5. Dairy

Over the next decade, total<sup>3</sup> **milk** production according to FAPRI should increase by 20% with most of the growth generated by enhanced yields per cow. Roughly one third of the increase should occur in the Americas, essentially in the US and Brazil, whilst 45% would occur in Asia, mainly in China and India. As regards Australia, it should come back to its pre-drought level in 2011 assuming a return to normal weather conditions. According to FAPRI's forecasts for 2017, **butter** production for the modelled countries would increase by 35% almost exclusively due to India. Production of **cheese and milk powder** should rise by 22% (mainly due to increases in the US and EU).

World dairy **prices**, having peaked in 2007/08, are expected to go down in the coming years, although with different speeds. If Oceania FOB prices for milk powders in 2008 are seen decreasing by 15% (**WMP**) to 19% (**SMP**), **butter** price should diminish by 9%, whereas **cheese** price should decline by only 3% compared to the previous year. The downward trend is expected to last until 2013, with prices decreasing by 2% (cheese) to 4% (powders) per year. During 2014-17 prices are expected to start recovering, albeit at a slow pace (about 1% per year on average).

One of the main reasons behind the price increases seen recently may be attributed to the falling **stocks** of dairy products, which in the end of 2007 were less than half of those seen 5 years before. The decrease in SMP stocks was most prominent, as was the rise in its price. On the contrary, the reduction in stocks for cheese was more limited (by 8% in 2007 as compared to 2002), and the price rise was smaller compared to other dairy products. FAPRI forecasts slow recovery in world dairy stocks of **cheese, SMP and WMP**, while **butter** stocks, after a brief rise in the next few years, should continue their downward trend.

## 3. PRICE TRANSMISSION FROM FARM-GATE TO THE FINAL CONSUMER

### 3.1. Prices

These high agricultural prices can be expected to be reflected in consumer prices to a much lower extent given the low and declining share of agricultural raw materials in food production costs. For example, the share of the cost of cereals stands today at approximately 4-5% of the consumer price for bread and other cereal-based products (e.g. pasta, biscuits) as the main cost items are the cost of labour, energy and capital. Therefore, the 84% increase in wheat prices between February 2007 and February 2008 can be expected to lead to an increase in the retail prices of the product group "bread and cereal-based products" of around 3.5% maximum. (cf. box 3 with the example for the price of a baguette in France). The impact of higher energy and wage increases influences bread prices more significantly.

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<sup>3</sup> In the case of dairy products, FAPRI does not publish aggregates for the world. The total refers to the sum obtained for the modelled countries and regions (that encompasses the main players + some other countries)

### Box 3: impact of the rise in soft wheat prices on the price of a baguette in France

According to the European Flour Milling Association (EFMA), the production of a baguette of 250 gr requires 306 gr of soft wheat (with a share of soft wheat flour in a baguette weight terms quantified at 94%). It also estimates that in February 2007, the share of soft wheat in the value of a baguette at retail level varied depending on the distribution channel between 3.98% and 5.69%.

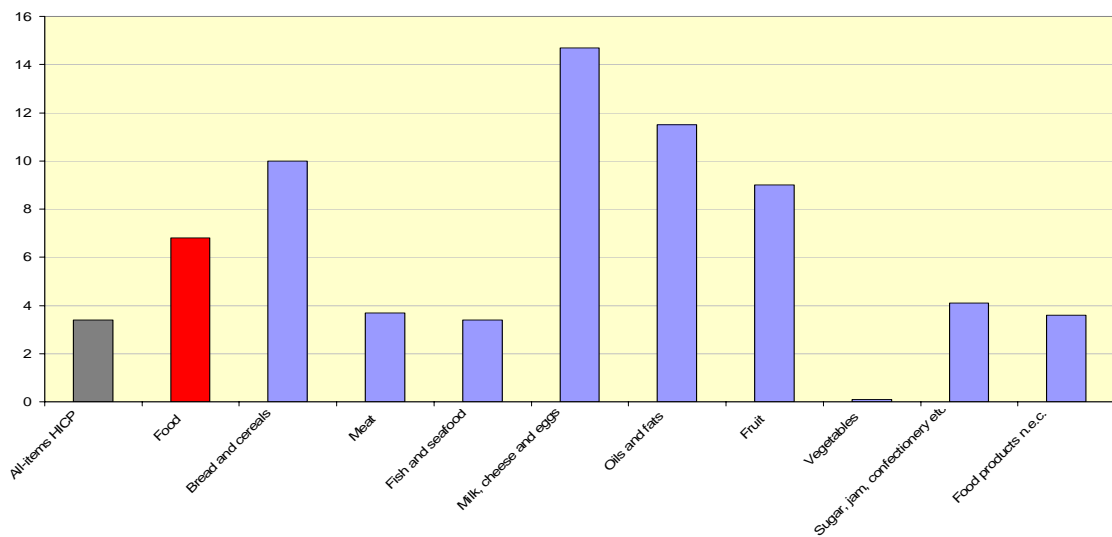
On this basis, it is possible to evaluate the price impact of the 84% rise in the price of soft wheat on the retail price of a baguette in France as presented in the table below. The information presented in the table shows that with a wheat price of € 130/ton, the cost of wheat in a baguette is just under € 0.04. At current wheat prices (~ €230/ton) the cost of wheat is under €0.07. Hence for any increase in the price of a baguette beyond 3 or 4 cents, we have to look for causes other than the cost of wheat.

Calculation table				
<b>February 2007:</b>				
<b>Baguette price (dependent on distribution channel)</b>	<b>70 €cents</b>	<b>80 €cents</b>	<b>90 €cents</b>	<b>100 €ce</b>
Soft wheat price (free mill)	130 €/t	130 €/t	130 €/t	130
Soft wheat value in the price of one baguette - absolute	3,98 € cents	3,98 € cents	3,98 € cents	3,98 € ce
Soft wheat value in the price of one baguette - relative	5,68%	4,97%	4,42%	3,9
<b>February 2008 (compared to February 2007):</b>				
Soft wheat price (84% higher than in February 2007)	239 €/t	239 €/t	239 €/t	239
Baguette price increase explainable by soft wheat price increase	4,77%	4,18%	3,71%	3,3
Increase in the French HICP for bread/cereals	5,30%	5,30%	5,30%	5,3
Difference in price increases ('real' minus 'explainable')	0,53%	1,12%	1,59%	1,9
Baguette price ('explainable')	73,34 € cents	83,34 € cents	93,34 € cents	103,34 € ce
Baguette price 'real' (based on change in French HICP for bread/cereals)	73,71 € cents	84,24 € cents	94,77 € cents	105,30 € ce
Difference in prices ('real' minus 'explainable')	0,37 € cents	0,90 € cents	1,43 € cents	1,96 € ce
Soft wheat value in the price of one baguette - absolute	7,31 € cents	7,31 € cents	7,31 € cents	7,31 € ce
Soft wheat value in 'real' price of one baguette - relative	9,92%	8,68%	7,71%	6,9

Given the high share of cereal feed in the production costs of livestock (about 50% to 70% in pork and poultry production costs), producer and consumer prices for animals and meat should be affected by the rise in cereal prices (though at different pace owing to the production constraints of the poultry and pig markets, notably the production cycle in the pig sector). Therefore, like for cereals, we can expect for meat products a maximum impact of around 8% on the consumer prices of poultry meat and pork products. For dairy products, the impact is more pronounced, with a 30% increase in the consumer prices of cheese. As a result, the overall food price increase should have reached around 5% (i.e. in line with the first estimates presented in September 2007), other food consumption items being equal.

Compared with latest (up to February 2008) data on consumer prices (Harmonised Index of Consumer Prices from Eurostat), it appears that total food price inflation as measured by the HICP (7%) exceeds the "theoretically-derived" price increase.

**Figure 3 Annual (February 2008/February 2007) overall and food price inflation in the EU-27 (%)**



Source: Eurostat.

Consequently, it appears that only parts of the observed price increases at retail level can be attributed to agricultural commodity price increases (with the "residual element" resulting from developments in other cost components making up the final product value at retail level, such as labour and energy costs, and/or higher margins over the food supply-chain).

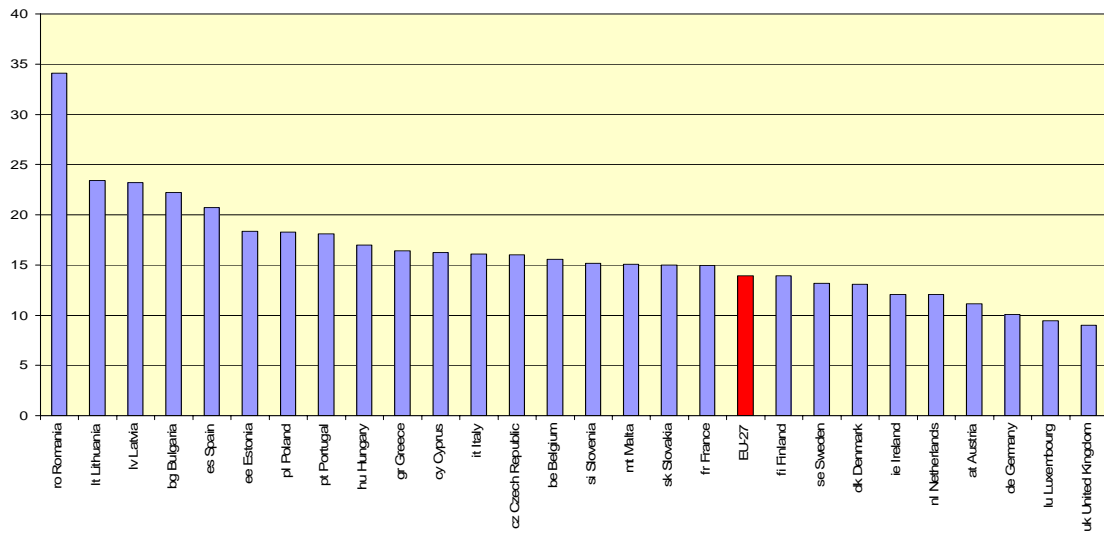
In this context, it should be acknowledged that the competitive structure of the food supply chain, including concentration and market segmentation of the processing, retail and distribution sectors, also determines the extent and pace with which the changes in agricultural prices is passed on to consumers. Although over the medium- to long-term there has been no significant evidence of partial transmission of price changes between the farm and consumer levels, this may (have) happened in the short run in some sector/country specific situation (cf. specific investigations launched in some EU countries).

### **3.2. Living standards**

The impact of the rise in food prices on the standard of living of consumers should be further limited by the gradually declining share of total household income spent on food. This share currently stands on average at 14% in the EU and, indeed, is much lower for many countries of northern Europe.

Therefore, in the case where higher commodity prices were fully transmitted to consumers, the overall increase in consumer food expenditure of 5% would lead to a more moderate decrease of around 0.7% in the purchasing power of an average EU-27 household.

**Figure 4 Share of food expenditure in total household expenditure by EU Member State in 2007 (%)**

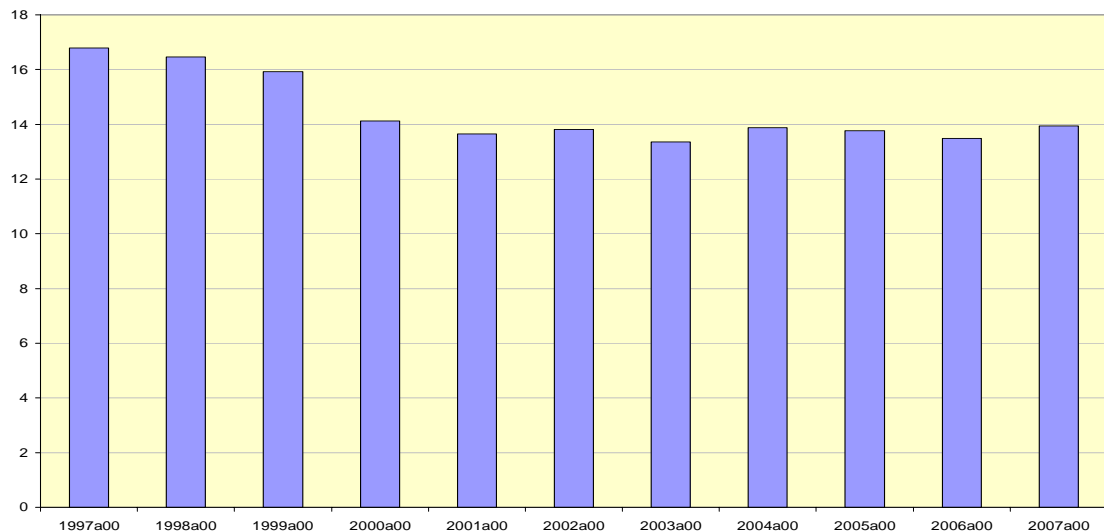


Source: Eurostat.

However, it should be taken into account that the degree of recent price developments and transmissions along the supply chain varies across Member States, so that the impact considerations given above for theoretical EU-27 average consumer prices and households do not hold true for the diversity of implications actually felt in single Member States.

Furthermore, the share of food expenditure in total household expenditure varies considerably among Member States (reflecting differing income/welfare levels). Within Member States, the respective share varies between different household types (household types differentiated by household income, household composition and household location).

**Figure 5 Annual change in the share of food expenditure in total household expenditure in the EU-27 (%)**



Source: Eurostat.

As a result, higher food prices would affect consumers differently across the EU, according to the income level and consumption patterns: in general, low income households spend a higher share of their disposable income on food and they have less flexibility to adjust expenditure to other budget items. Moreover, regional differences in dietary patterns mean that countries where food consumption is a more important share of household budget and where less processed food is consumed would be more affected than others (e.g. more processed foods in Luxembourg and less processed foods in Romania).