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High prices on agricultural commodity markets: situation and prospects

A review of causes of high prices and outlook for world agricultural markets

This working document does not necessarily represent the official views of the
European Commission

High prices on agricultural commodity markets: situation and prospects

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1. EXECUTIVE SUMMARY

The paper responds to concerns about causes and prospects of high agricultural commodity prices which started increasing in 2006/2007 and soared in early spring 2008, and thus focuses on agricultural commodities utilised mostly as food. It takes stock of and elaborates existing analysis within the DG AGRI and elsewhere of causes of high prices on agricultural commodity markets, and prospects for their developments.

Price volatility has always been present and hikes in the prices occurred before the current one. Reasons for current price pressures are unambiguous and have been reiterated on multiple occasions: a combination of steadily increasing demand and lagging supply or production shortfall, exacerbated by short-term economic and policy factors. These factors are both of structural and cyclical nature. However, the contribution and combination of these factors varies between sectors. For example, high wheat prices are for the large part attributable to supply constrained by weather conditions while demand elements play a more important role in the oilseeds sector and maize. Although price fluctuation is characteristic for products exhibiting seasonality, for some commodities recent hikes exceeded levels explained by accepted market fundamentals.

With production often concentrated in a relatively small number of exporting countries, small changes in production patterns can have major consequences. The paper identifies and analyses in detail major drivers behind increased prices. It stresses how different factors (supply, demand) play varying roles in development of different commodities.

Major drivers identified behind the increased prices (and increased volatility) can be grouped into three themes (1) changes in agricultural production and trade related to physical attributes of the production influencing only supply side, (2) changes in macroeconomic environment and their impacts influencing both supply and demand sides, and (3) agricultural and trade policies and various policy responses influencing mostly supply, but also have an impact on the demand side. The temporary dimension – transitory or structural – of specific factors in some cases remains open to discussion.

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). The outlook part of the report compares commodity projections made by the Organisation for Economic Co-operation and Development (OECD) in coordination with the Food and Agriculture Organization of the United Nations (FAO), Food and Agricultural Policy Research Institute (FAPRI) and the United States Department of Agriculture (USDA). In the shorter time frame the

increase in prices seems to be driven by supply constraints which many believe are temporary in nature.

A question often posed touches upon contributions of individual factors on current price increases as well as projections. To get a glimpse of alternative future and to gauge impact of individual factors, projections often rely on two approaches: (1) scenario analysis and (2) stochastic analysis. Both results are summarised in the paper.

Contributing to the uncertainty of projections is an increasing number and occurrence of uncertain factors compared to previous projection periods. Among those are global economic environment, petroleum prices, research and development, potential introduction of new land into production, climate change, and developments in agricultural, trade and energy policies.

The Commission Communication on high prices sets out key areas for action in three categories – efforts to mitigate the short to medium term impact of price rises, initiatives to increase supply in the longer term, and addressing the crisis at international level.

2. INTRODUCTION AND STOCKTAKING

The paper was drafted in response to concerns about causes and prospects of high agricultural commodity prices which started increasing in 2007 and continued in early 2008, and thus focuses on agricultural commodities utilised mostly as food. It takes stock of and elaborates existing analysis within the DG AGRI and elsewhere of causes of high prices on agricultural commodity markets, and prospects for their developments. It builds on existing analysis and notes¹ while at the same time its earlier versions served as an input to them.

After a steady increase in 2006 and in the first semester of 2007, the prices of many agricultural commodities reached exceptional levels. Peaks occurred in different periods for different commodities. The Commission Communication on high prices compares February 2008 against the same month in 2007, and notes that prices increased by 113% for US wheat, 93% for EU wheat, 83% for US soybeans, 52% for Thai rice, 24% for US maize, and 30% for dairy products.² Compared to their latest peaks, in early May prices in the EU dropped by 40% for wheat and by 35% for butter. Prices have fluctuated since then, with the most recent increase in grain prices in response to floods in the United States. Capturing actual absolute price changes is a moving target, and one of the Commission's key actions from the Communication on high food prices includes monitoring of agricultural prices.

However, price hikes and declines are a normal feature of commodity, including agricultural markets. The present price surge is the 5th 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 Available at http://ec.europa.eu/agriculture/foodprices/index_en.htm

² Cited in the Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions from 20 May 2008 (COM(2008) 321 Final)

Outlook for commodity prices and accompanying uncertainty remain high on the agenda of analysts and policy makers, especially in the light of food shortages resulting in unrest in many developing countries and fears of increased inflationary pressures. World trade in many agricultural commodities remains characterised by thin markets (16% of world wheat production is traded vs. 8% for dairy products and 7% for rice). Consumption is increasing steadily and thus a small reduction in production results in a sharp decline in carryover. In the environment of low stock levels the policy choices in the short run are limited. The question of medium and long term developments remains open, and depends on the evolution of the markets.

This note focuses on:

- (1) Factors behind increasing prices
- (2) Analysis of temporal dimension of these factors: are they temporary or structural?
- (3) Commodity-specific analysis based on projections from the Organisation for Economic Co-operation and Development (OECD) in coordination with the Food and Agriculture Organization of the United Nations (FAO), Food and Agricultural Policy Research Institute (FAPRI) and the United States Department of Agriculture (USDA).
- (4) Long term prospects of high prices

The note provides a short overview of consequences of high prices in both developed and developing countries. However, the issue is addressed in greater detail by other services of the Commission.

The prospects part draws on projections by FAPRI (finalised in January 2008, released in March 2008), OECD-FAO (finalised in March 2008, released in May 2008), and to a lesser extent USDA (finalised in December 2007, released in February 2008). Each of those projections uses different commodity and geographic aggregates and relies on different macro-economic assumptions and data. In addition, due to their different publication schedules projections include different policies (e.g., US Energy Independence and Security Act from 2007 is included in FAPRI but not in the OECD or USDA). Consequently, absolute numbers obtained by their models are to be compared with caution.

While a self-standing document, this paper is related to annual outputs of DG AGRI of Monitoring Agri-trade Policy (MAP) newsletters and the annual publication on comparative analysis of projections of agricultural commodity markets prepared by DG AGRI in summer each year.³ By focusing on commodity price only, the current report precedes and prepares ground for annual publication.

³ MAPs and outlook comparisons are available at http://ec.europa.eu/agriculture/analysis/tradepol/index_en.htm

3. FACTORS BEHIND INCREASING PRICES

Commodities most affected by recent price hikes and getting most attention by media were crops. Crops tend to be more important for food security in many developing countries with low share of processed products. Dairy and meat experienced changes in price levels and volatility later due to different nature of production and in general longer production cycle (apart from eggs and liquid milk). In addition, due to increasing interest of investors in agricultural markets, traded futures (wheat, corn, soybeans) seem to attract investments and thus gaining more coverage.

Figure 1 shows international prices for rice, maize, wheat and soybeans in nominal (current dollars, dashed lines, left column of the legend) and real (constant dollars, solid lines, right column of the legend) dollars. It shows that although price volatility has always been present and hikes in the prices occurred before, wheat and maize prices have recently (March 08) approached the historically high levels in nominal terms during the time of the oil shock of the 1970s but have eased since then, mainly for wheat in the light of a bumper crop and dairy. Prices are constantly evolving owing to market developments, and any comparisons of absolute levels are purely snapshots. Nevertheless, data suggests increases are real although in real dollars, current peaks are lower than the peaks observed in the 1970s. However, a careful interpretation is needed since the absolute levels of deflated prices depend on the year chosen.

Figure 1:

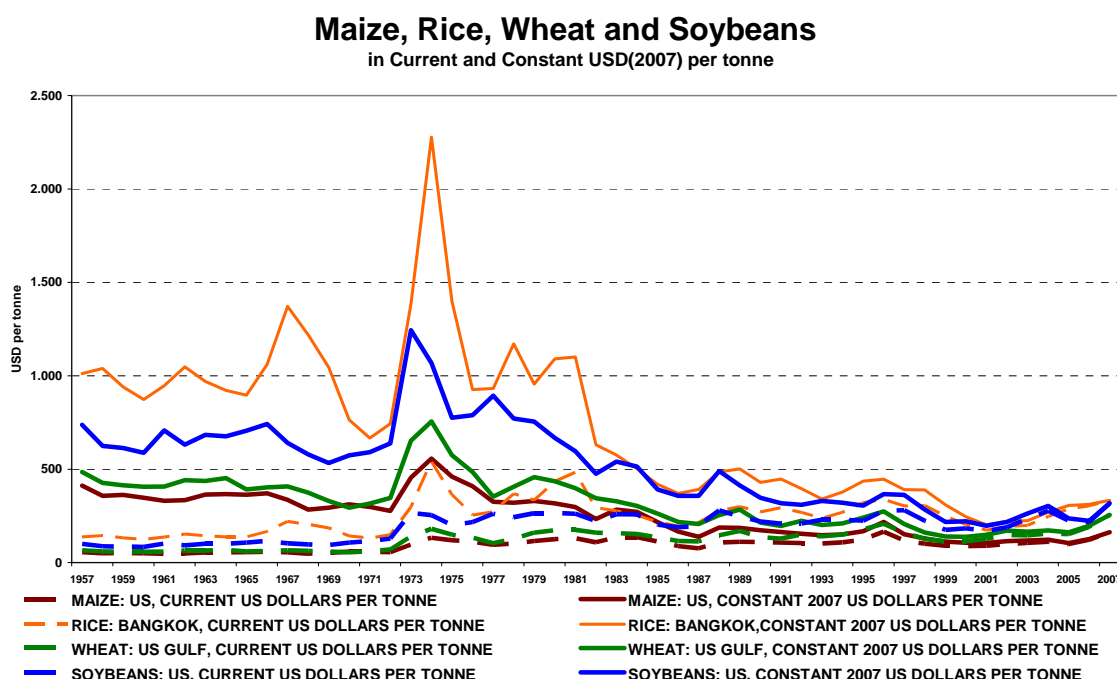


Figure 2 zooms on monthly developments of crop prices from Figure 1 in nominal terms starting from January 2004 (April figures are preliminary). Some prices showed signs of abatement but increased again following weather related events.

Figure 2:

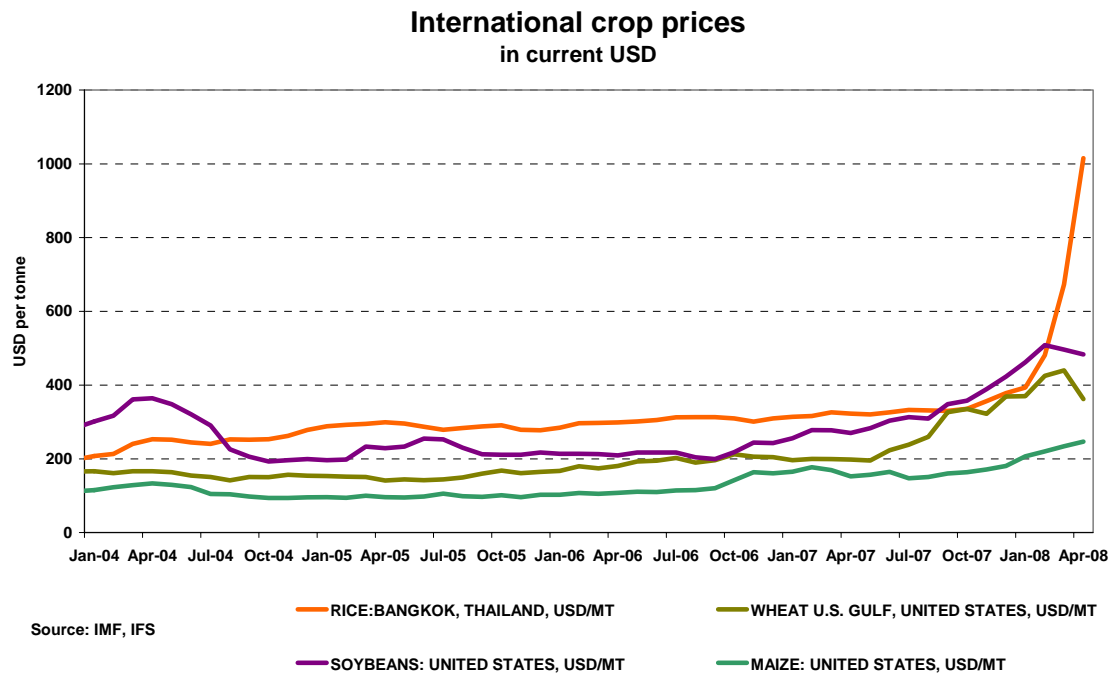
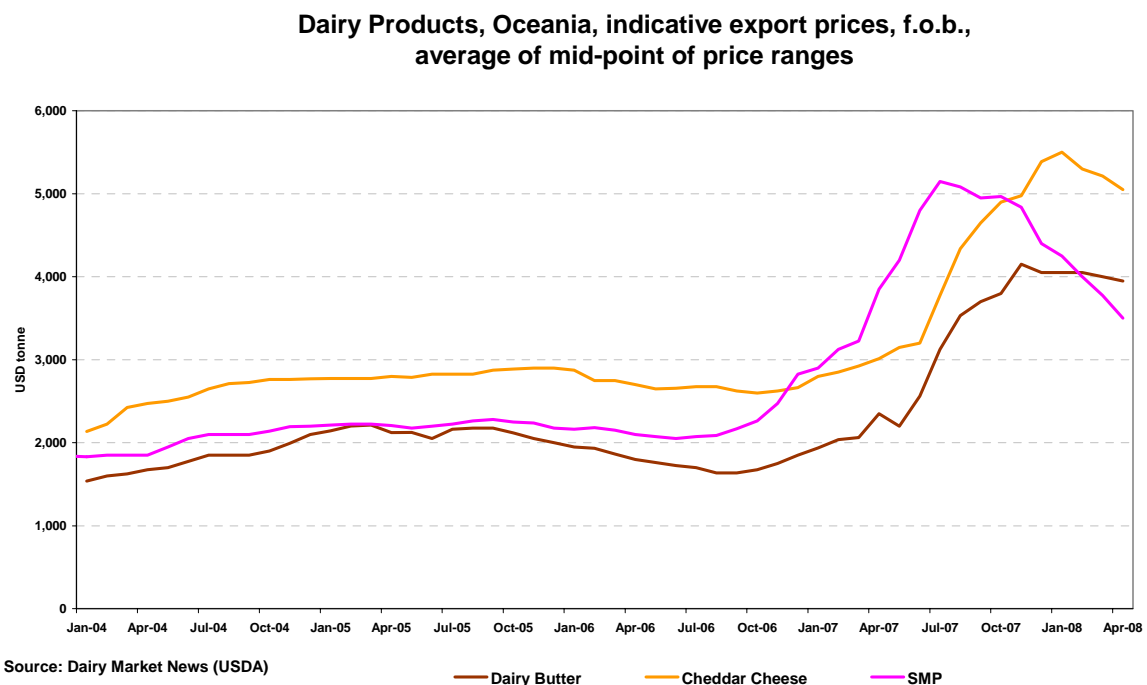


Figure 3 shows evolution of dairy prices from January 2004 to April 2008, with peaks for different products occurring at different time periods. Peaks in the dairy appear to be one-time beeps and have eased since then.

Figure 3:

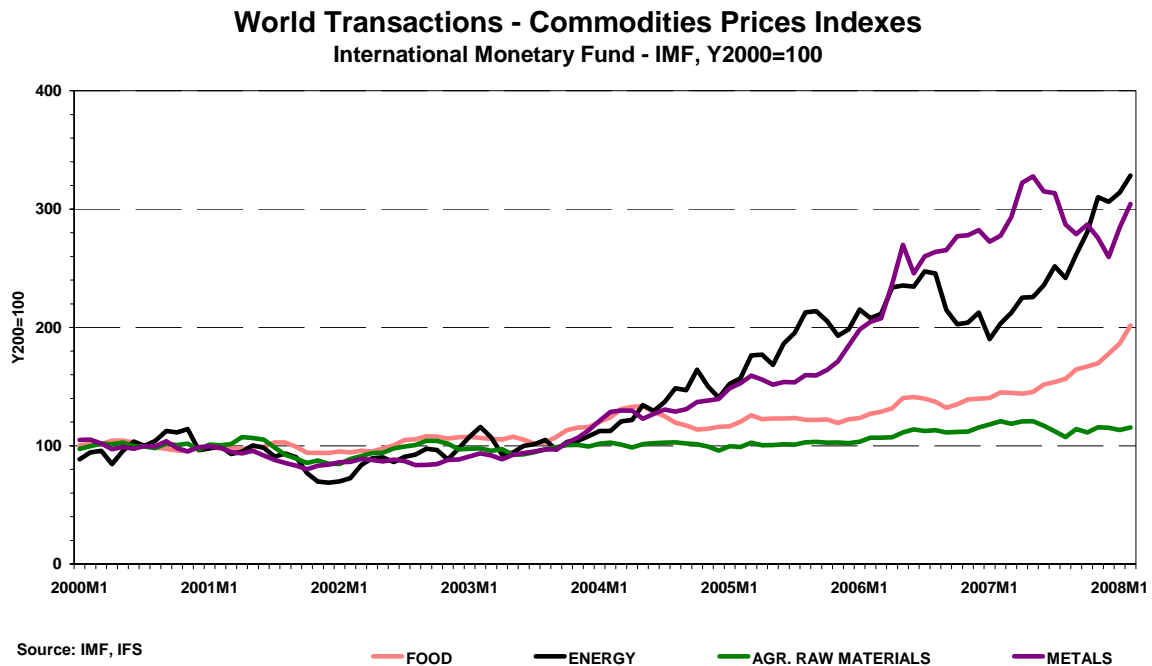


Factors behind this increase in general are analysed in detail in this note. The contributions of individual factors are determined qualitatively, although the concluding part presents quantitative estimates of contributions provided by various academic and

research organisations. Nevertheless, a careful assessment of quantitative contributions of different factors remains in order.

Agricultural commodities are not alone in experiencing increased price levels. Commodity price indexes (Figure 4) from the IMF indicate that although the commodity index for agricultural raw materials has increased since 2000 (base year), the increases in food, energy and metals were more dramatic.

Figure 4:



Reasons for **current price pressures** are unambiguous and have been reiterated on multiple occasions: a combination of steadily increasing demand and lagging supply or production shortfall, exacerbated by short-term economic and policy factors. These factors are both of structural and cyclical nature. The temporal dimension of these factors in general is discussed in part 4. However, the contribution and combination of these factors varies between sectors. For example, high wheat prices are for the large part attributable to supply constrained by weather conditions while demand elements play a more important role in the oilseeds sector and maize.

Media tend to attribute escalating demand to emerging economies and need for biofuel feedstocks. Lagging supply receives some attention. However, demand is unlikely to escalate between two growing seasons and increases tend to occur in a more nuanced fashion. 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 been progressively increasing due to population growth. Without appropriate supply response, stocks get employed and diminish, resulting in a smaller buffer should a supply failure or a slowdown occur. Declining stocks can be also policy driven. The question of stocks is addressed separately in Part 4.3.1.

On the other hand, reduction in supply can occur more suddenly. Lagging supply is partly due to weather related conditions and slow increases in yields, resulting in decreasing grain production in major exporting countries. With production concentrated in a relatively small number of exporting countries, small changes in production patterns can have major consequences. Furthermore, increasing presence of non-traditional investors may be driving "inflation" in futures prices and, via linkages with the cash market, exacerbating pressure on cash prices.

Some of the underlying characteristics of agricultural markets that tend to be omitted from the discussions include seasonality, reliance on weather and relative perishability of the product. Seasonality limits agricultural capacity for short-term adjustment as compared to other industrial sectors which have also recently shown similar developments and amplifies the impact on agricultural prices.

Causes and effects of high food prices are schematically illustrated in Annex I. The figure sheds light on the dynamics, complexities and linkages embodied in and surrounding the issue of high food prices.

Major drivers identified behind the increased prices (and increased volatility) can be grouped into three themes⁴:

- (1) Changes in agricultural production and trade related to physical attributes of the production such as poor harvests due to weather conditions, water scarcity, yield stagnation (mainly for cereals), shifting production zones, and spread of diseases. **These factors influence only supply side.**
- (2) Changes in macroeconomic environment and their impacts including population and income growth and its consequences for urbanization and changes in dietary patterns, price of crude oil influencing cost of inputs, energy prices and freight costs in general, change in the currency system, crisis on the financial markets and increased interest in investing on commodity markets (itself triggered by drivers identified behind the increased prices). **These factors influence both supply and demand side.**
- (3) Agricultural and trade policies and various policy responses are put in place to mitigate the effects of high prices. At the same time some measures further increase prices. **These factors influence mostly supply, but also have an impact on the demand side** (for example restrictive trade policies resulting in hoarding). Energy policies (e.g. biofuels) are also gaining importance and contribute to increased demand for industrial utilisation.

Cross-cutting elements influencing all three groups are uncertainty, expectations (related to macroeconomic development and policies) and unsettled markets, such as new markets for agricultural commodities, announcements in the policy sector, expected restrictive trade policies responding to high price situations, etc. Like previous category, these factors category influence both supply and demand sides. Uncertainty is further discussed in the concluding part.

⁴ The current exposition in the note is simplified in terms of linkages among agricultural production, economic developments, and policy announcements.

It is still uncertain whether the phenomena currently observed on the market are not limited to mere shifts in supply and demand. A shift in supply or demand predicts that an increase in prices will be translated into an increase in the quantity supplied and a reduction in the quantity demanded. However, current developments suggest that there has been an increase in the quantity demanded or a reduction in the quantity supplied when prices increase, raising questions about assumed short run elasticity of supply and demand for many commodities.⁵ For example, demand for maize remained strong despite increasing prices.

A major part of the price increase occurred after the production decisions for the next season were already made, and thus taking into account different growing seasons, an increased supply response in the Northern Hemisphere can be expected in the next season. Production decisions in the Southern Hemisphere responded to high prices (for example, sowing of wheat in Australia occurs in April). In addition, short term adjustments in the production with limited land supply can only come at the expense of shifting acreage to other commodities and thus reducing their supply and putting upward pressures on prices. Exceptions include set-aside in the EU and early retirement from the Conservation Reserve Program in the United States. However, some land earlier in conservation might be found in environmentally fragile areas.

The debate continues on whether current price hikes are transitory in nature (due to a coincidence of transitory factors occurring at the same time) or are a reflection of a systemic change in agricultural commodity markets. Causes of this shift (summarised above) are likely to be complex and difficult to separate into transitory and long run. Crop production shortages in major producing countries have more important effects on markets in the short term while changes in the macroeconomic conditions are more important in the longer term. With several factors being triggered simultaneously, it is difficult to attribute whether the changes are temporary or structural. The evidence suggests that some market fundamentals might be changing owing to new demands but the uncertainty prevails regarding the extent of the adjustment.

⁵ Technically speaking, analysts suggest there has been a shift in the underlying supply and demand relationships.

4. TEMPORAL DIMENSION OF FACTORS: TEMPORARY OR STRUCTURAL

The causes behind the increase in price for agricultural commodities can be either temporary (or cyclical) including short term factors amplifying market dynamics or structural that include lasting changes in supply-demand relationships and dynamics on agricultural commodities markets. The paper strives to identify whether the factors responsible are temporary or structural.

4.1. Changes in agricultural production and trade due to physical characteristics of production

Two main issues can be identified on the production side affecting supply and constraining the capacity of the sector to respond to domestic and international demand:

- (1) Weather related phenomena include but are not limited to droughts, floods, heat waves, early or late frosts, excessive rainfalls during harvest season, and other adverse climatic events, and in broader terms water scarcity. An often cited example is the case of recurring drought in Australia. There is **lack of agreement** among analysts **whether** weather related phenomena are **temporary or structural** in nature considering climate change. For the purposes of their baseline forecasts, projection models assume return to normal weather conditions for the entire projection period. Potential shocks are then analysed using different scenarios.
- (2) Production related phenomena might be in part triggered by weather but they also might have developed independently. They include yield stagnation (or a slowdown of yield growth depending on the commodity) mainly for some of the cereals, shifting production zones facilitated by changing climatic conditions and water scarcity, or chances for faster spread of diseases, usually animal ones, partially aided by closer links among countries as a consequence of globalisation.

Yield stagnation applies to many commodities although rates differ. Figures 5, 6 and 7 show the development of yields of main cereals and soybeans for the EU, US and China, respectively. Yields, naturally, depend on weather conditions and occurrence of diseases. However, the trend of yield stagnation is particularly striking in the case of wheat (in the EU approximately from the early 1990s) and rice (in China from the mid 1990s) due to lack of investment. 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, maize yields have followed an increasing trend.

Figure 5:

EU27 - yields of main cereals and soybeans

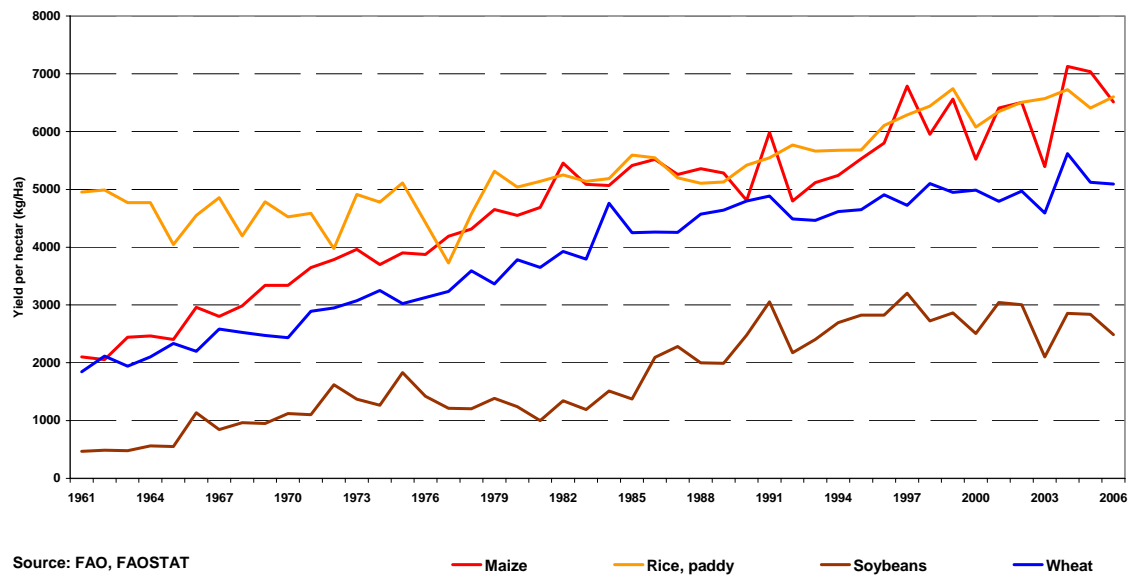


Figure 6:

United States - yields of main cereals and soybeans

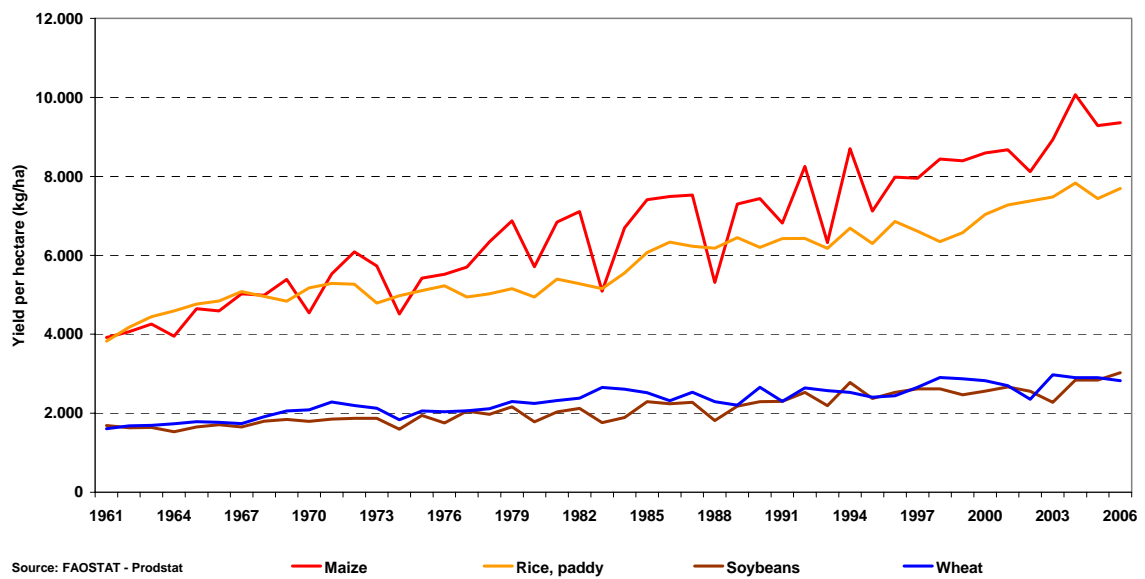
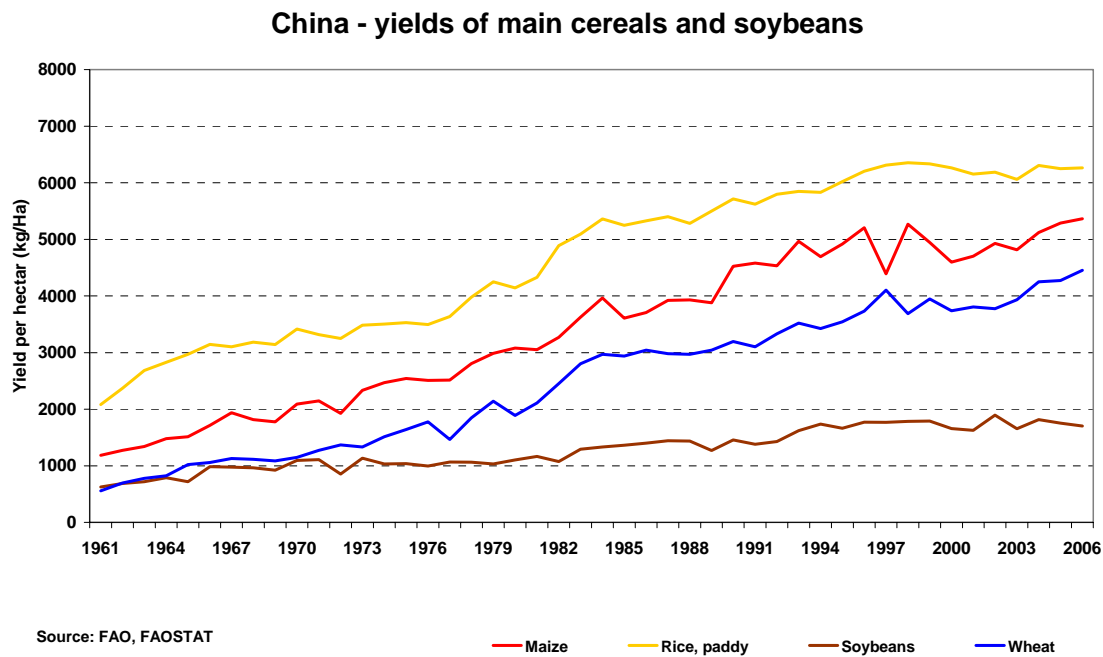


Figure 7:



Both phenomena limit the production available. While impact of weather on the decreasing production of major exporting countries and consequent stock reduction is not to be discarded, in the absence of a steady demand it would seem unlikely alone to result in such a high increase in prices. Different sectors are affected by different types of weather events, such as droughts or excess rain. Grain production seems to be the most affected by any events. Droughts are also likely to affect dairy and livestock production as well.

Supply side factors played a role in large increase in grain and oilseeds prices which in turn affected the rest of the agricultural sector by switching to higher valued commodities and influencing the costs of inputs in meat and dairy sectors. In case of the US, shifts from soybeans to maize occurred because at the time when planting decisions were made, futures market favoured maize. However, the contribution of supply factors varies depending on commodities.

Even if some of the factors can be transitory, with only few major suppliers and increasing demand for commodities (growing global economy, population), production shortages caused for example by weather conditions result in tight market conditions, higher prices, higher volatility, and decreasing stocks.

The impact of high prices of agricultural commodities on land values and rental rates deserves further analysis. In addition to producers interested in extending their production, land is also bought by institutional and individual investors wishing to diversify their portfolios in the environment of troubled financial markets.

4.2. Economic parameters

Economic parameters, which either directly or indirectly can affect both supply and demand, include a range of factors such as:

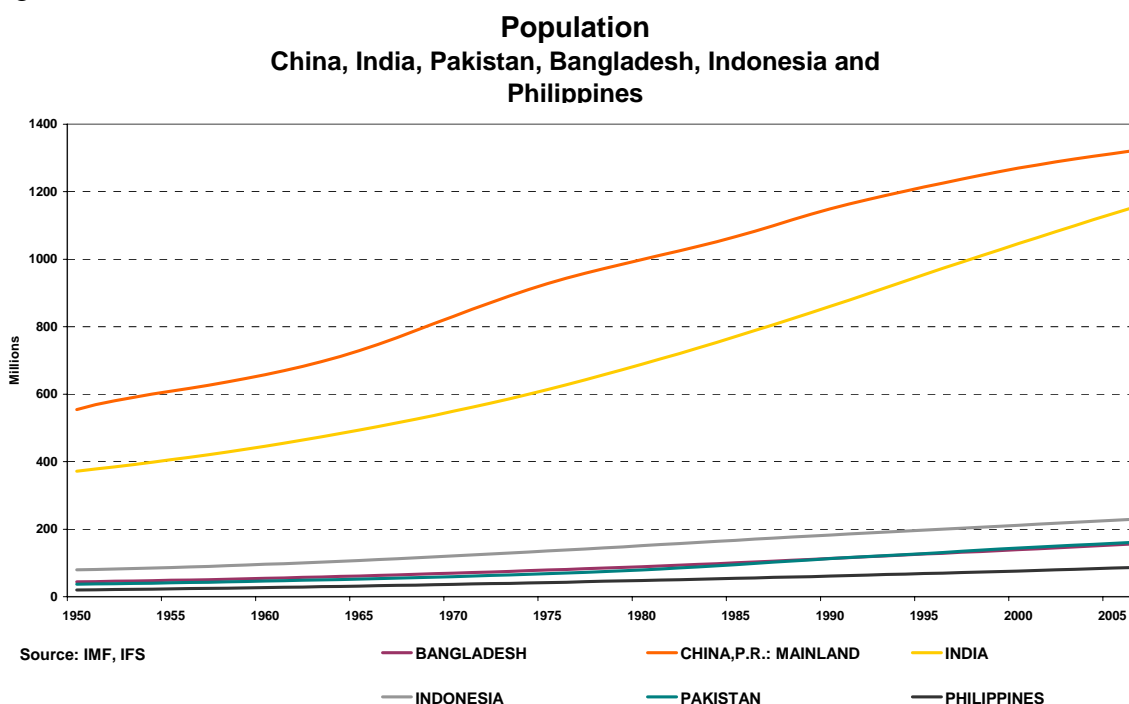
1. Population and income growth
2. Price of crude oil
3. Currency movements
4. Activities on the commodity exchange markets

These factors induce consequent adjustment and often call for additional policies to be put in place. The nature and impact of economic parameters are described below.

4.2.1. Population and income growth

The United Nations Secretariat indicates possible population developments under four different scenarios: high variant, low variant, constant fertility variant and medium variant. All variants assume normal mortality and migration rates but differ in their assumptions of fertility. All variants project world population in 2010 to be around 6.9 billion. In the long run projections diverge: in 2050 the low variant projects 7.8 billion while the constant fertility variant projects 11.8 billion people. Figure 8 shows increasing actual population in countries with the biggest population growth.

Figure 8:



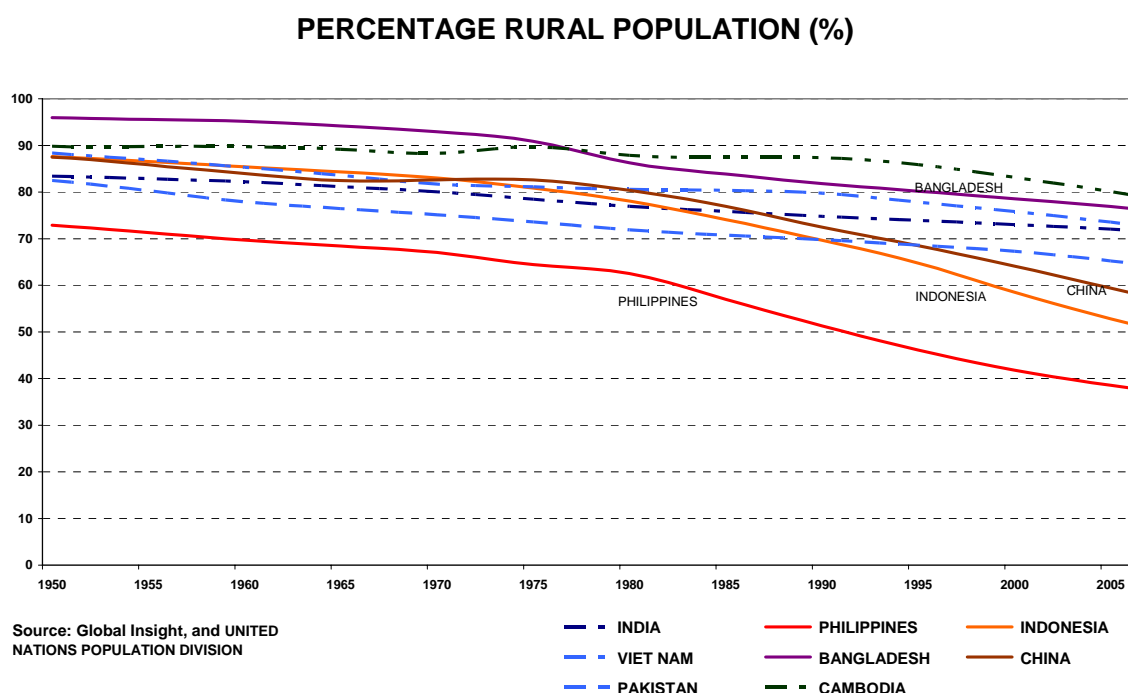
Population growth, albeit slowing compared to the 1980s, still remains strong. All projections discussed in the prospects part of this note assume around 1.1% average annual rate of population growth over the next decade.

The forecasts in the available commodity outlooks (FAPRI, OECD-FAO and USDA) rely on strong economic and population growths driving the demand. Both population and GDP growth in developing economies (definition of which might differ across different projections) exceed rates of growth in developed countries. For the developed market economies, FAPRI assumes an annual rate of GDP between 1.8 and 2.4%, while the same figure for the developing market economies ranges from 5.2 to 6.6%. The OECD-FAO outlook uses a figure ranging from 2.2 to 2.5 % for the OECD countries and an average for non-OECD countries from 5 to 7%. The average for non-OECD member countries is driven up by China (estimated rate of growth between 8.2 and 11.3%) and India (5.3 – 7.7%). The USDA assumes the strongest average world real GDP growth, above 3.5%.

Changes in macroeconomic environment caused by population and income growth spark off consequent changes, such as demographic adjustments, urbanisation and changes in dietary patterns. Dietary requirement of aging populations likely to suffer from illnesses often associated with lifestyles in many high income countries might be altered to respond to their needs. Aging population represents more pressing concerns for developed countries although across the world the share of people aged 60 or 65 and higher is increasing. Consequently, the per capita consumption of various foods change: demand for grains and meats might decrease while demand for fruit and vegetables might increase. Agricultural commodity projection models include increases in population in absolute terms but lack sophistication to directly incorporate changes between rural and urban population as well as age distribution that consequently influence markets.

Income driven changes in dietary patterns (mostly demand for meat) are most notable in Asia and Latin America. An example of changing dietary patterns related to higher incomes coupled with urbanisation is China and its demand for meat and dairy products. While rural population relies on a traditional diet and backyard farming, for a variety of reasons the majority of urban population purchases its meals, many of which are meat based, ready. **These changes tend to be structural in nature and in general drive demand.** Moreover, in extreme cases urbanisation might affect the quantity of labour available for agriculture and thus limiting agricultural production. Figure 9 shows declining shares of rural population in the countries most affected by urbanisation. As of 2008, the share of world rural population slightly exceeds the share of urban population, but scissors are opening up the opposite direction and the parity is reached sometime between 2005 and 2010.

Figure 9:



In addition, urbanisation also affects the land supplies available for agricultural production. Areas around urban centres tend to suffer from shrinking farm land due to industrial zones and residential areas. Consequently, supplies for urban centres are often transported and might incur higher transportation, refrigeration and other energy-intensive costs highly responsive to increasing oil and energy prices.

4.2.2. Price of crude oil and related costs

The Commission Communication on high oil prices⁶ recognises that global energy supplies had recently failed to keep pace with constantly rising global demand for energy. As in case of agricultural commodities, reasons behind the increases are both structural and temporary. Among the structural ones are future availability determined by exploration and production, refining bottlenecks, and steady global demand. Among the short term developments are geopolitical situation and active presence of institutional investors not directly concerned with oil.

The impact of the price of crude oil on agricultural sector used to be limited to direct effects through production costs such as increased energy prices, prices of inputs such as fertilisers, and transport. Figures 10 and 11 show the long term relationship between crude oil prices and price of cereals, as well as crude prices and price of oilseeds. While there appears to be a correlation because of input and output relationships between commodity prices and crude oil prices (described later in this chapter), other factors influencing supply and demand naturally intervene in the relationship between commodity prices and crude oil prices.

⁶ Communication from the Commission on Facing the challenge of higher oil prices (COM(2008) 384 final)

Figure 10:

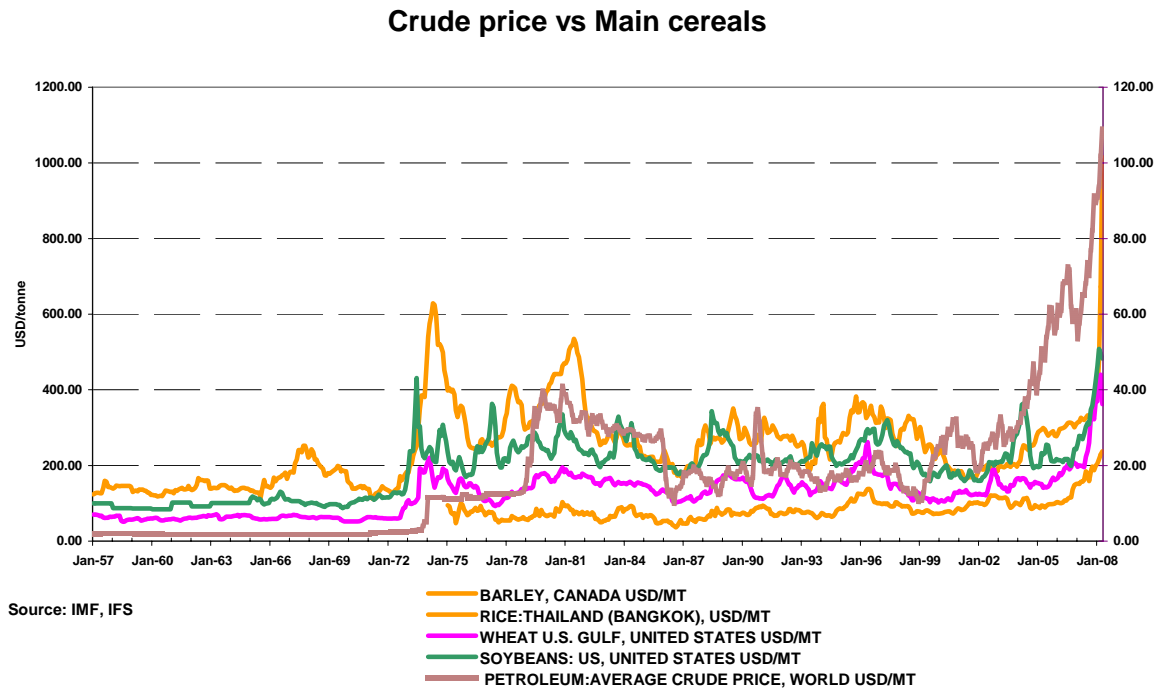
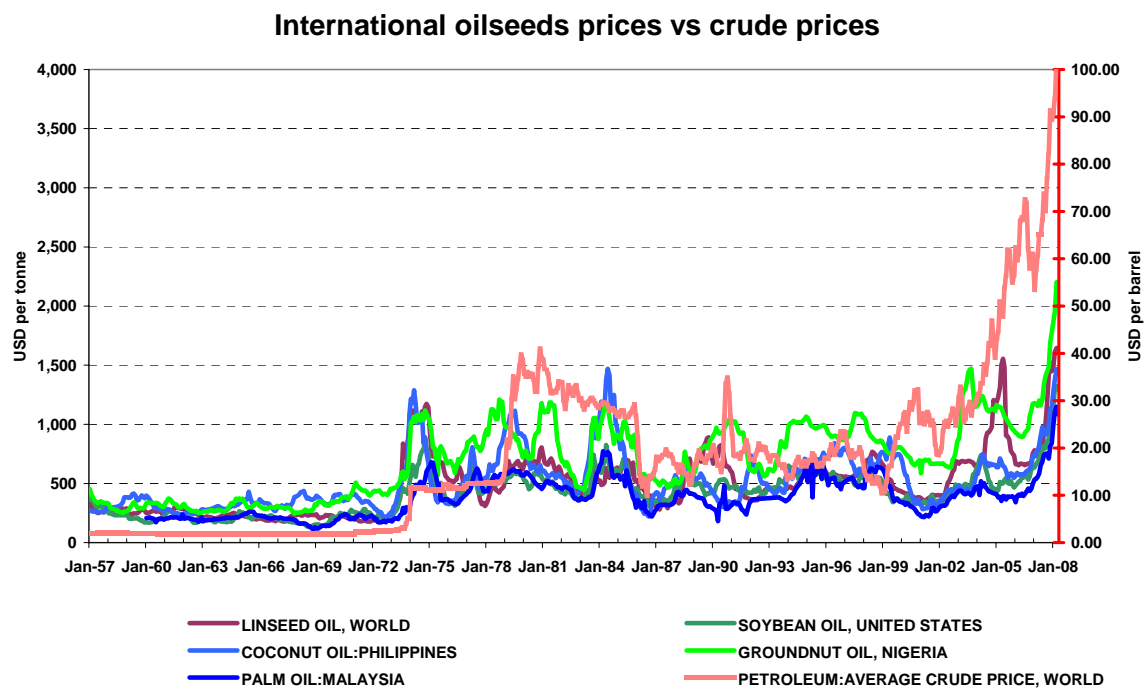


Figure 11:



Figures 12 and 13 focus on recent developments between commodity prices and crude oil prices from January 2004. In general prices seem to be moving in line.

Figure 12:

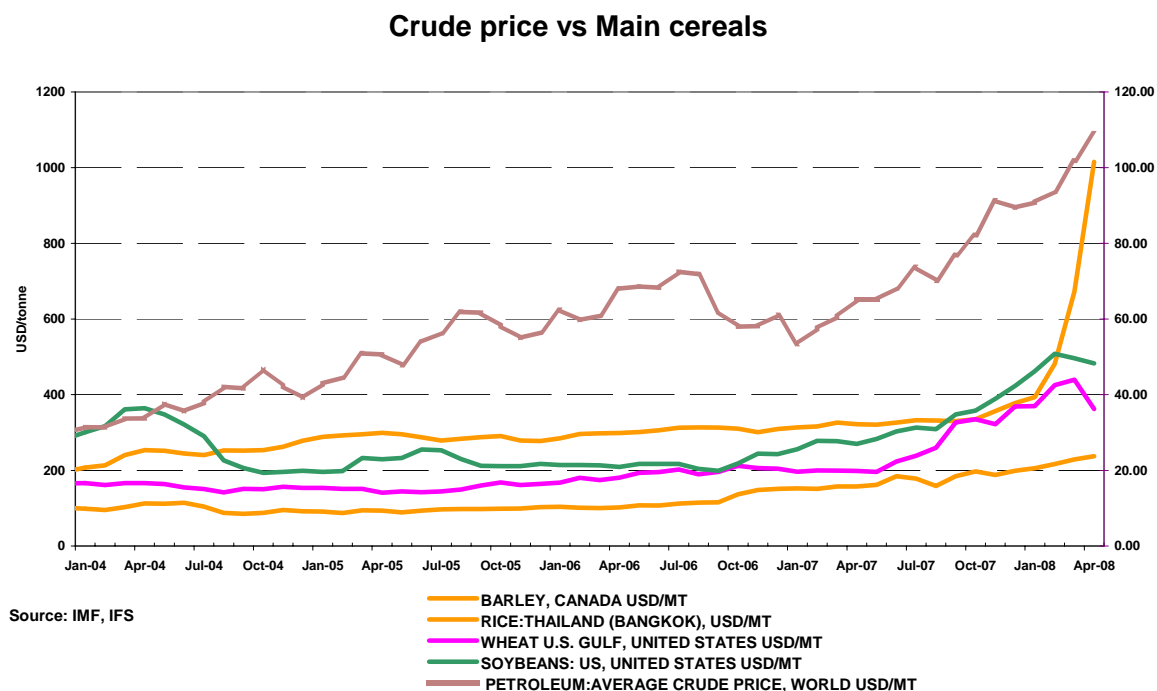
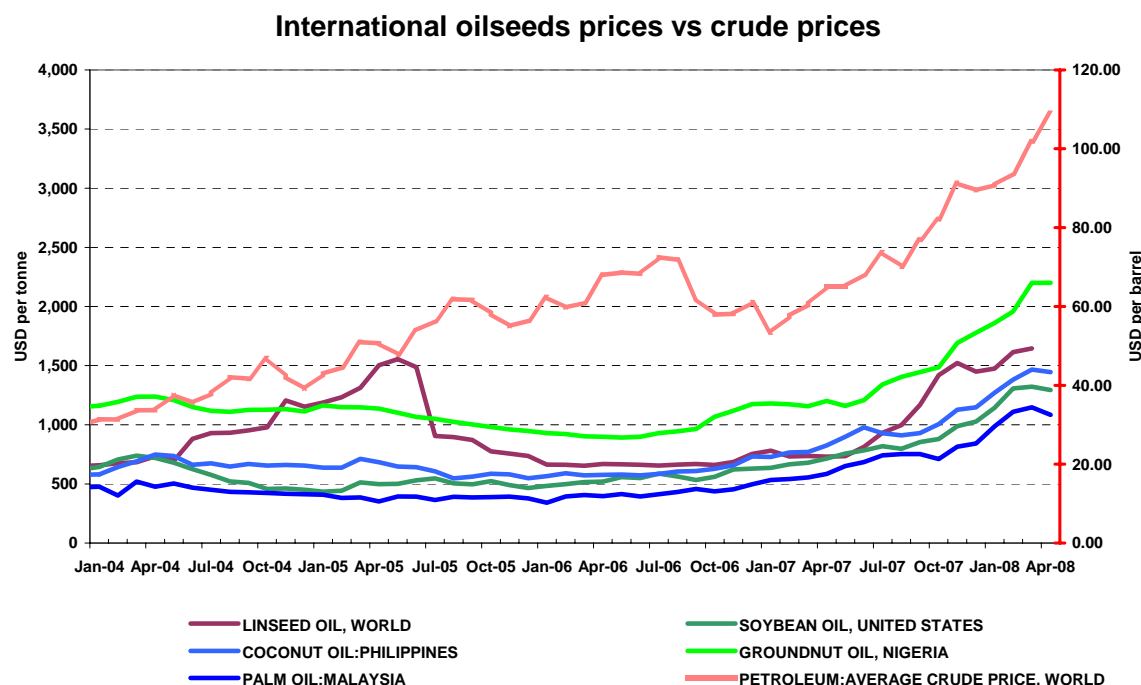


Figure 13:



A new indirect component – biofuels feedstocks resulting from the introduction of energy policies covered separately in Part 4.3.5 – appeared in the equation represented by introducing additional demand for commodities. It might be premature to attribute specific weights to the role of biofuels (a separate analysis will be carried out on this topic) but it is highly likely that they play some role on the marketplace. Nevertheless,

petroleum prices raise input costs and increase demand for agricultural products used as feedstocks of alternative energy strengthening two-way linkages between energy and agricultural sectors.

On the input side, Figure 14 illustrates a close relationship between the price of crude oil and the price of raw fertilisers. For example, the price of nitrogen fertiliser increased by 350% since 1999, and prices of other fertilisers experienced similar developments. High oil prices also result in higher costs of food processing, transportation and distribution.

Focusing on the developments of recent years, Figure 15 shows the relationship between crude price and raw fertiliser between January 2004 and April 2008. Prices of raw fertilisers follow an increasing trend and do not show signs of abatement. High input prices influence the profit margin of raw commodities. In the environment of increasing input costs and production that might have been contracted in advance or sold before the current price hikes, farmers' profit margins might be squeezed. Increasing cost of inputs might influence the choice of crop to be planted: for example, due to lower use of fertiliser, soybeans are cheaper to grow than grains.

Figure 14:

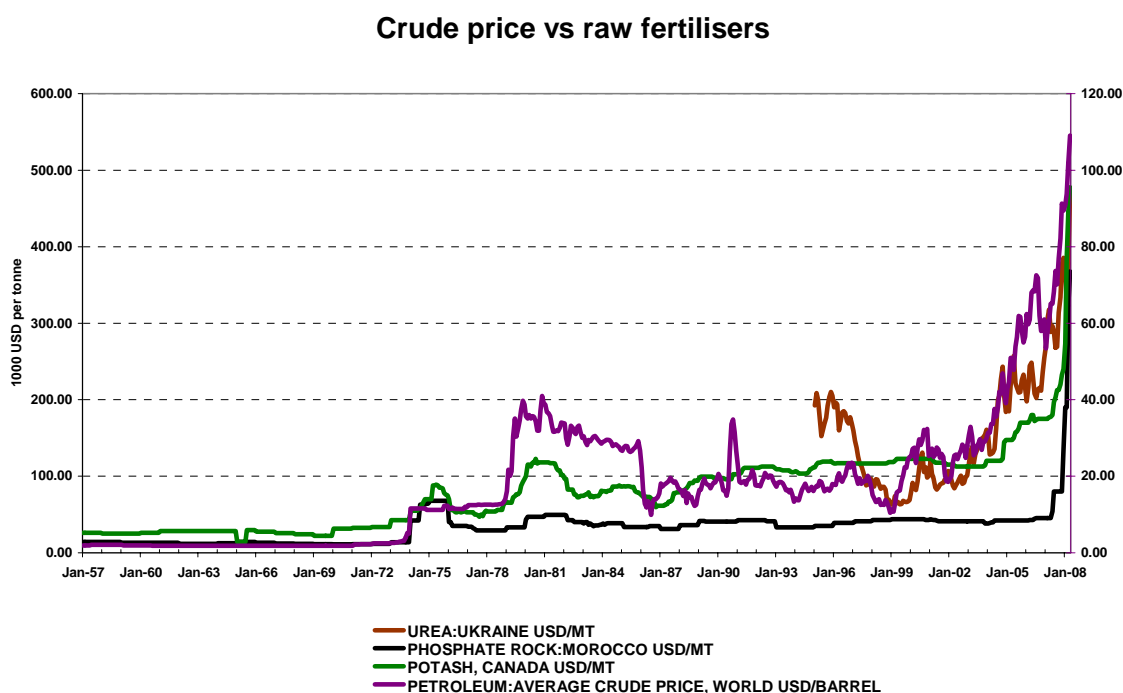
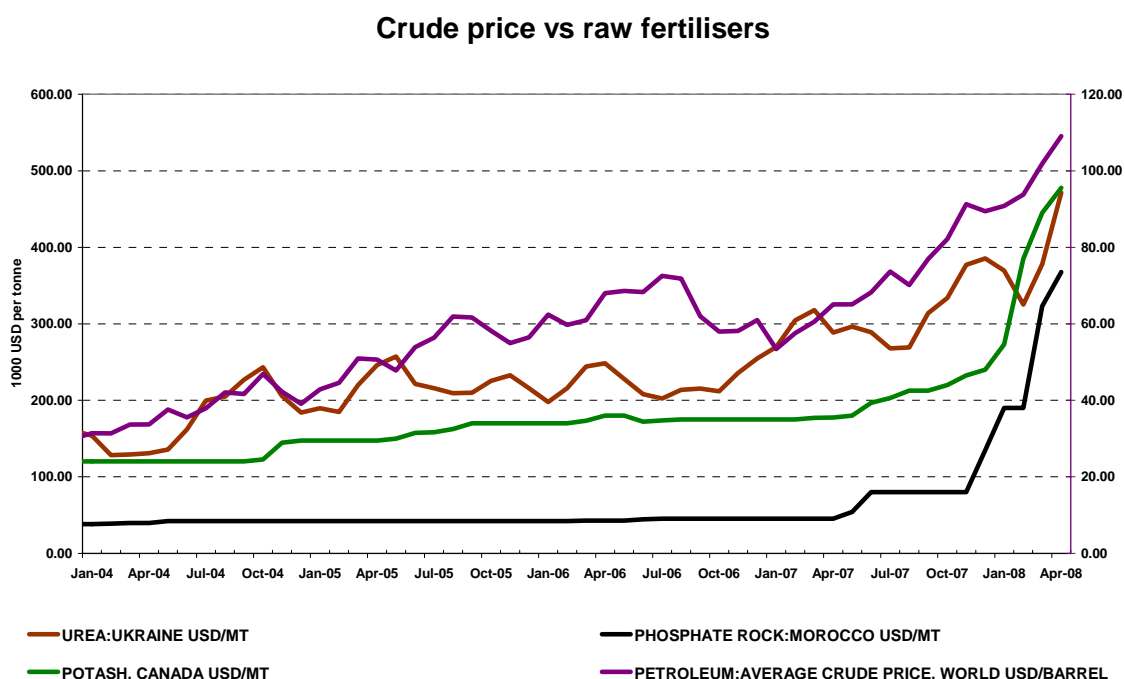
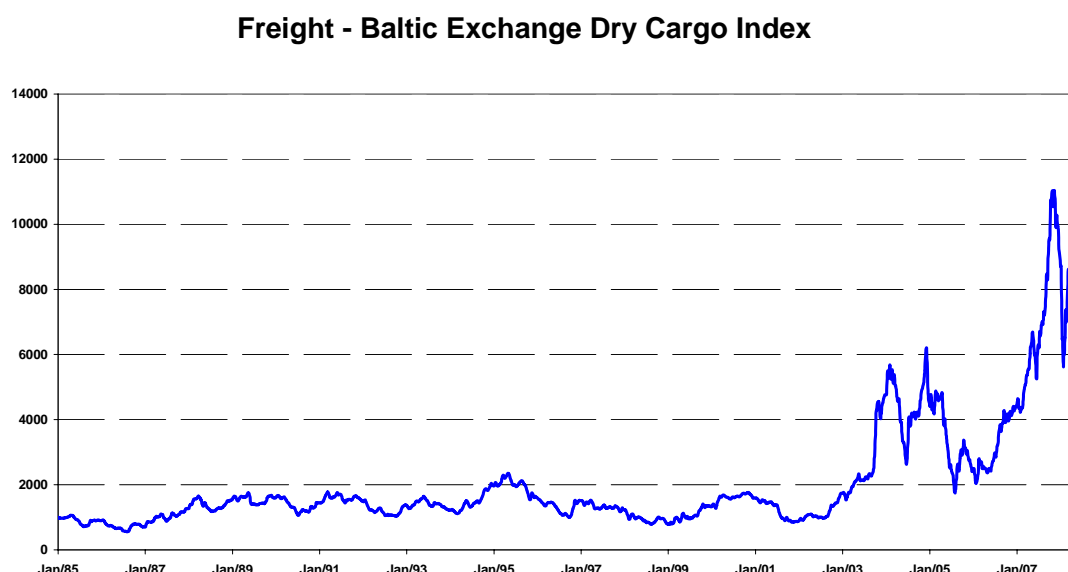


Figure 15:



The domestic commodity price is a sum of world price, freight rate, insurance costs, border policies if applicable and the structure of distribution system. The paper does not tackle the question of food distribution systems and supply chains, but recognises their importance in price transmission. Freight rates in January 2008 are more than double those of January 2007. Figure 16 illustrates the development of the Baltic Exchange Dry Cargo Index (the most relevant for grains), while Figure 17 shows the recent development of the same index showing significant increases since the beginning of the year.

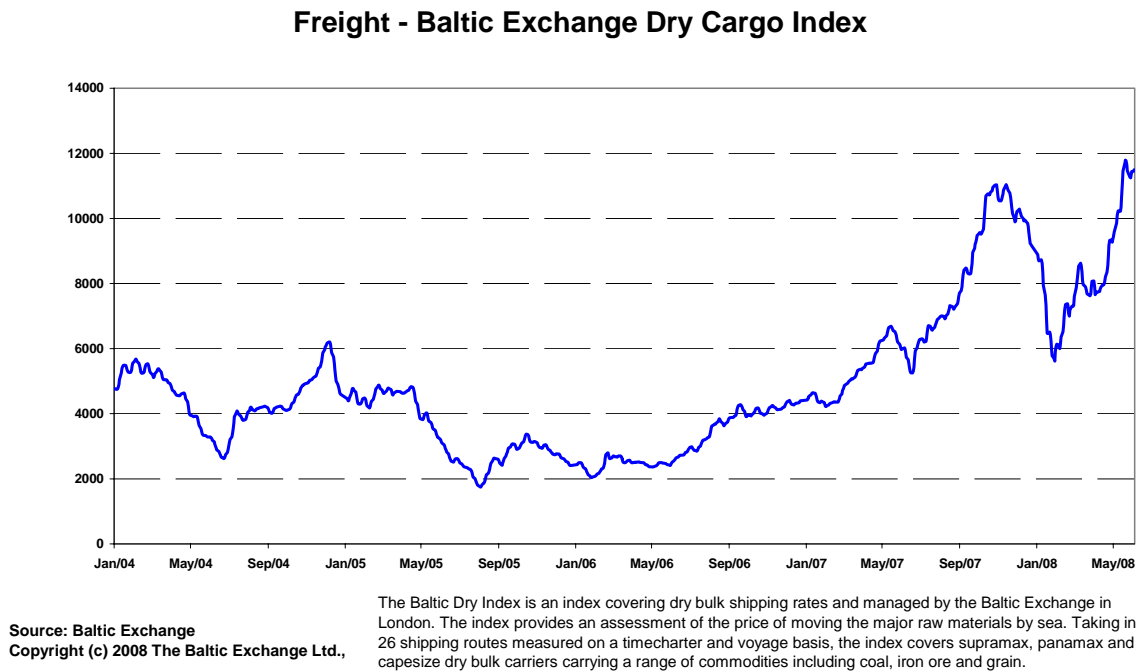
Figure 16:



Source: Baltic Exchange
Copyright (c) 2008 The Baltic Exchange Ltd.,

The Baltic Dry Index is an index covering dry bulk shipping rates and managed by the Baltic Exchange in London. The index provides an assessment of the price of moving the major raw materials by sea. Taking in 26 shipping routes measured on a time charter and voyage basis, the index covers supramax, panamax and capesize dry bulk carriers carrying a range of commodities including coal, iron ore and grain.

Figure 17:



High freight rates, although related to high fuel prices, are also a result of increased trade volumes, infrastructure congestion (such as ports), overall stretched shipping capacity, and longer trade routes. Transport of bulk agricultural commodities directly competes for the shipping capacity with iron ore and similar products, demand for which is driven by economic expansion and associated building boom in emerging economies (notably China). The problem of freight rates which affects both supply (transport of outputs) and demand (transport of inputs) **is likely to be structural in nature**. In addition, increasing transport costs might be altering trade patterns as some countries might go for the nearest supplier to save on transport cost, which in turn reduces the degree of world market integration (regional and local prices not in line with world levels).

Infrastructure overhaul well suited to the needs of increasing world commerce is likely to take time. In addition, improvements in shipping capacity, including an introduction of new ships and shipping containers are largely dependent on the availability of raw materials (such as steel) whose price has also been driven up by steady demand from emerging economies. In addition, changing shipping patterns reflecting trade routes are also influencing availability of shipping containers.

4.2.3. *Currency movements*

Currency movement of the last few years were of a great significance. Undervalued or overvalued currencies affect the competitiveness of imports and exports of a particular country. Currently the US dollar (USD) is most affected by depreciation. As many commodities are traded in USD, this contributes to inflationary pressures. Progressive decline of USD makes US exports cheaper and increases the demand for US products. USD depreciation also lessens the underlying impact of the rise in world prices when converted to national currencies, although prices increased regardless of the currency used.

Figures 18 and 19 illustrate nominal prices for maize and wheat, respectively quoted in euros and USD coupled with the development of the euro – USD exchange rate for comparison. There appears to be a correlation between the exchange rates and commodity prices quoted in USD. However, other factors do play a role as well.

Figure 18:

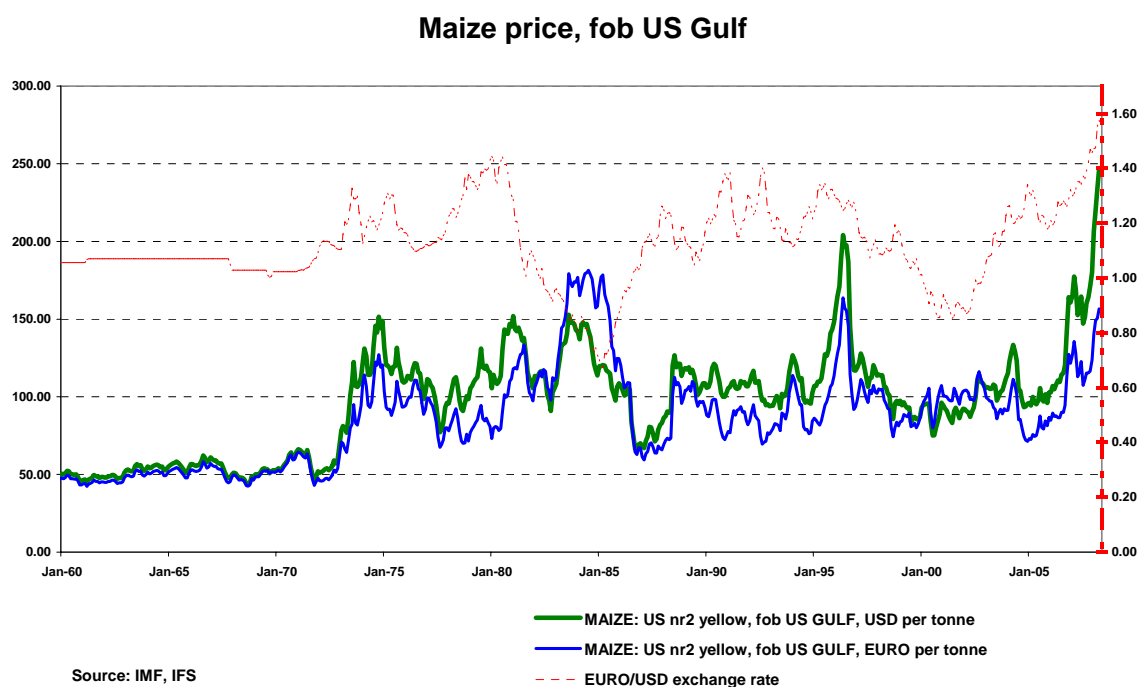
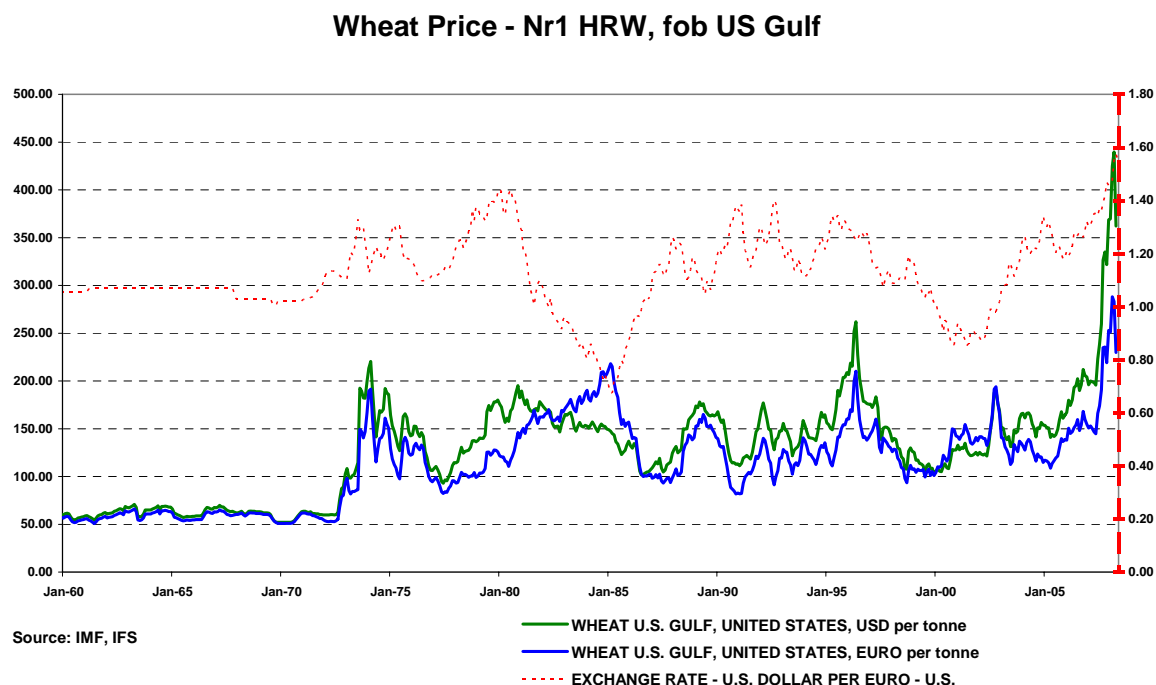


Figure 19:



USD still plays a central role on the financial and commodity markets. Exchange rate adjustments can act as buffer absorbing increases in commodity prices quoted in USD. The most affected are countries with currencies locked in fixed exchange rates with USD and thus bearing the depreciation resulting in higher food and energy prices. Exchange

rates have the potential to strongly influence competitiveness and agricultural trade across regions.

However, changes in exchange rates also imply commodity futures and options quoted in USD are cheaper and thus attract attention of foreign (non-traditional) investors seeking to protect themselves against changes in exchange rates and inflationary pressures. Every time USD weakens, hedge funds seem to move to buy positions in the commodities, a move that is likely to push up prices. Thus currency movements influence not only cash prices but also demand for futures. Activities on commodities and derivatives markets are addressed separately in the next part.

4.2.4. *Activities on the commodity exchange markets*⁷

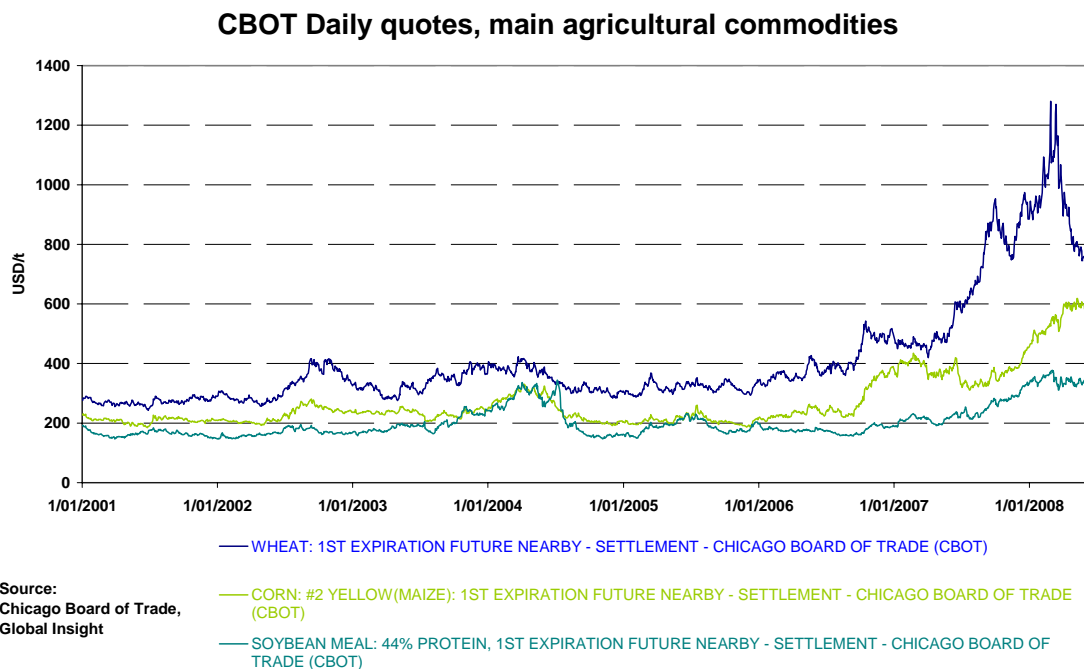
Traditionally (since the mid 1800s) futures markets have been used by producers, processors, manufacturers for the purposes of price discovery, risk management, and investment. Futures markets sell contracts agreeing to buy or sell the underlying asset at some time in the future with (practically) no limit on the number of contracts traded, size of the crop or inventory. Although some deliveries occur to ensure linkages between futures and cash, physical or financial assets are not acquired. The value of contract is derived from the value of underlying asset. The fundamental link between the price of the futures contract and the price of the underlying asset is the "cost of carry" until the expiration of the contract (e.g., storage plus insurance). As long as the relationship holds, supply and demand factors affecting prices in cash markets will be transmitted to the futures markets. Currently there seems to be evidence that this does not anymore hold for corn, wheat and soybean futures. Differences in the prices will be used by arbitrageurs. In a liquid futures market arbitrage will keep futures contracts tied to cash market prices.

During 2006, hedge funds, index funds and others became more involved in the agricultural commodity markets. In an environment of abundant international liquidity and slowing financial markets, investment capital has become increasingly involved in commodities futures markets.

Figure 20 illustrates price increases and volatility of futures quoted on Chicago Board of Trade. The price of futures increased, with soybeans and wheat experiencing the biggest increases in absolute terms.

⁷ This part draws on The Relative Impact on World Commodity Prices of Temporal and Longer term Structural Changes in Agricultural Markets (A note on the role of investment capital in the US agricultural futures markets and the possible effects on cash prices), TAD/CA/APM/CFS/MD(2008)6, OECD, Paris, 2008.

Figure 20:



Non-traditional investors (also called "passive" investors, such as banks, pension funds, hedge funds, swap dealers, etc) are becoming increasingly involved. They are present on the futures markets mostly for the purposes of investment looking for high returns and portfolio diversification⁸. Since they are not-active on the underlying cash markets, they are often suspected of disturbing futures markets and its linkages with underlying cash markets.

There are two categories of "passive" investors:

- (1) Those seeking portfolio diversification are not price sensitive, go for "long" (buy) positions with nearby expiration dates to achieve liquidity, and then roll their investments over to the next period. These rollovers tend to be predictable and anticipated by others on the market (often those identified in the second category), and can alter the trading dynamics and affect short term pricing.
- (2) Those seeking profit depend on profit opportunities relative to other investment alternatives, do not tend to take strictly long (buy) positions but will buy or sell depending on the markets, look for trends, take positions in any contract expiration month depending on their expectations. Biofuels, emerging economies, slow stock markets, etc are among factors that are attracting investors to the commodities markets.

⁸ Diversification is an addition of an asset that is uncorrelated with existing assets (correlation of commodity assets with stock assets is low, around 0.1, with 1.0 being a perfect correlation)

Annex II provides detailed tables about the involvement of passive traders based on data from the United States Commodity Futures Trading Commission. Summary is presented in table below.

	Monthly trading volume	Open interest ¹ (in mil bushels)		Share of non-commercial traders	
	Change Feb 05 – Mar 08	February 2005	March 2008	February 2005	March 2008
maize	85%	0.65	1.45	17%	43%
wheat	125%	0.22	0.45	28%	42%
soybean	56%	0.27	0.6	20%	46%
sugar		0.4	0.98	34%	34%

¹ "Open interests" are futures contracts that have been bought but not yet sold back [long positions] or sold but not yet bought back [short positions].

Between 2005 and 2008 the share of investment capital of the activity in the corn, wheat and soybean futures has grown. Non-commercial traders in the corn, wheat and soybean futures have shifted from net short to net long positions, which is consistent with the expectation of significant positioning on the long side of the investors seeking portfolio diversification.

Determining whether speculation contributed to the rise in elevated prices is a delicate exercise. Analysis, as foreseen in the Communication, is currently ongoing to identify the possible role of speculation. Increased commodity investment is related to speculation but not every long position is associated with speculative motives. Nevertheless, positions taken on the futures markets might exacerbate the rise in commodity prices and increased volatility might reinforce the notion of nervous markets in the current environment of tight stocks. There are divided opinions on whether more liquidity on the futures markets means more or less volatility. In theory additional liquidity brought by institutional investors should reduce volatility. However, from the producers' perspective, futures only work as a hedge if they fall at a price that matches fundamentals and matches cash prices. Previous research indicated that speculations were more likely to raise spot price volatility rather than price levels. Volatility can attract significant speculative activity which in turn can initiate a cycle of cash price destabilization.

Activities on the commodity exchange markets, unlike some other factors already described, to a certain extent bear a direct effect on prices but a lagged effect on the level of production. The lagged effects originate from the feedback between futures markets and cash markets and can influence planting decisions made.

In order to restrict involvement of speculators and possibly to reduce volatility, commodity exchanges have been increasing margins (amount needed to be paid in cash as opposed to credit). However, such steps seem to have negative impact on traditional futures markets participants using commodity exchanges for hedging. Other measures are currently being explored.

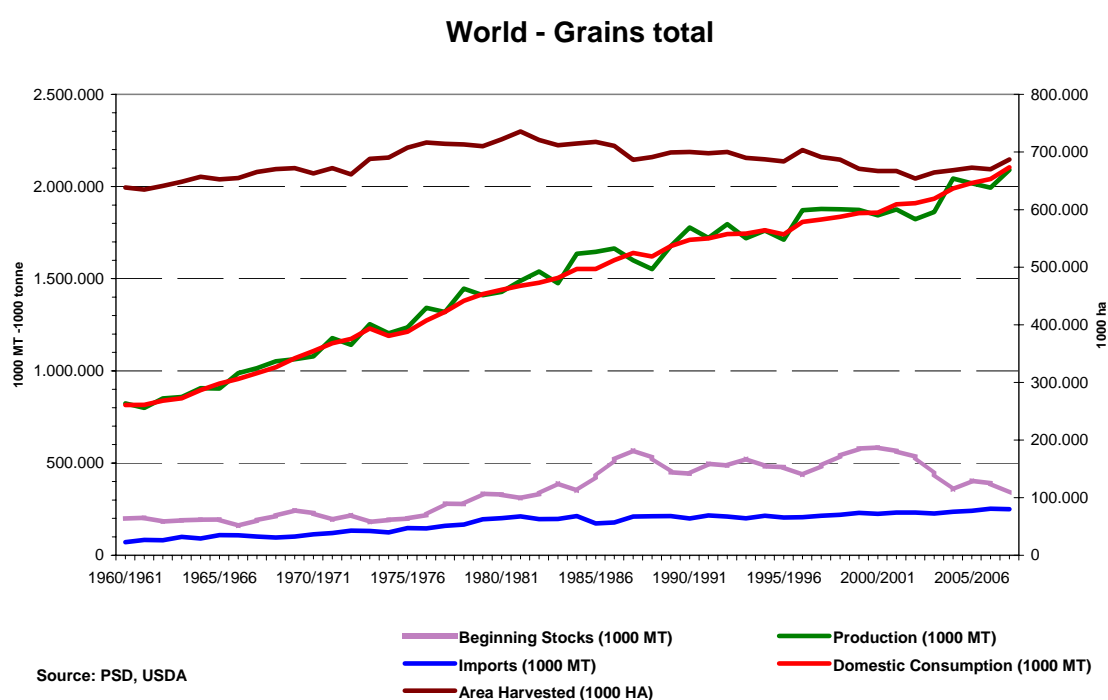
4.3. Agricultural and trade policies and related issues

4.3.1. Stocks and related policies

The current tight situation is clouded by declining stock to use ratios due to changes in the policy environment and general setting. The size of reserves held has decreased not least due to high costs of storing perishable products and high opportunity cost of storage in the environment of previously low international prices and development of other less costly risk management instruments. Stocks in many countries decreased as a result of agricultural policy reforms. The reform of the EU Common Agricultural Policy had decreases in price support and surplus reduction as an objective. The successive reforms of the CAP have certainly contributed to the reduction of public stocks in the EU. Nevertheless, the amount of stocks in some countries remains unknown; not least due to limited record keeping and storing part of stocks in private storage.

Figure 21 illustrate the development of beginning stocks, imports, area harvested, production and domestic consumption for all grains in the world. Worldwide, the total domestic consumption roughly corresponds to total production and enjoys a relatively steady growth. Harvested area has been declining slightly but has recovered since 2000. Total imports are relatively steady while beginning stocks are on decline starting from 2000.

Figure 21:



Focusing on Asia, the growth in domestic consumption of grains (majority of which is rice) has been outpacing the growth in production, while stocks have been diminishing (Figure 22). The trend of diminishing stocks in Asia is evident for corn, rice, and wheat (Figure 23).

Figure 22:

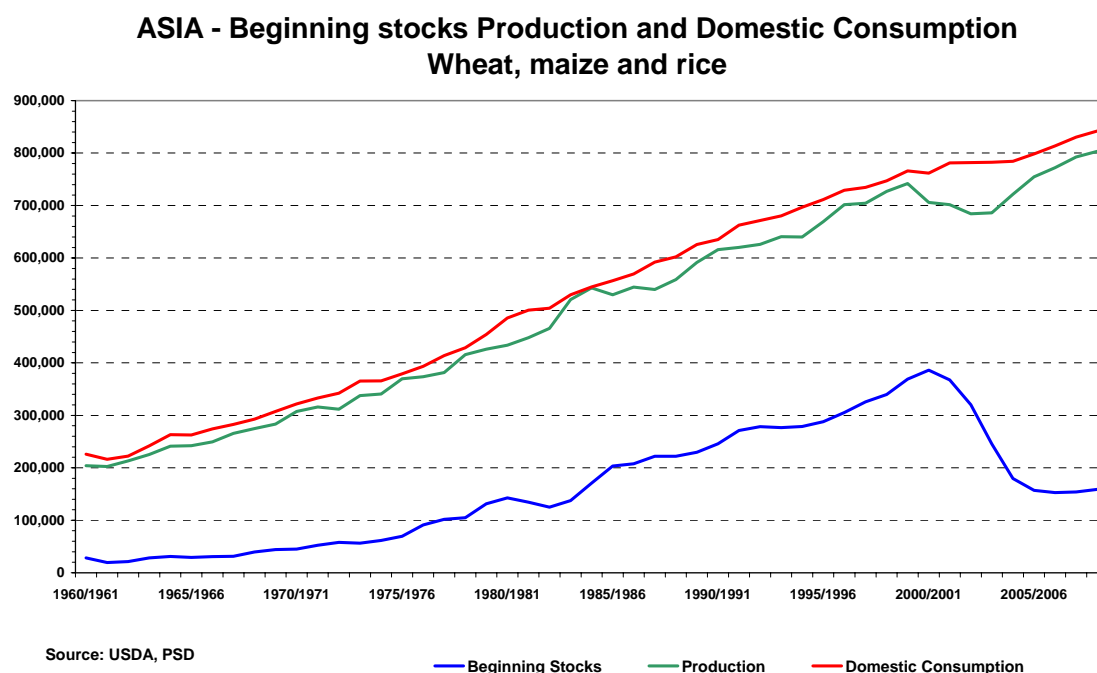
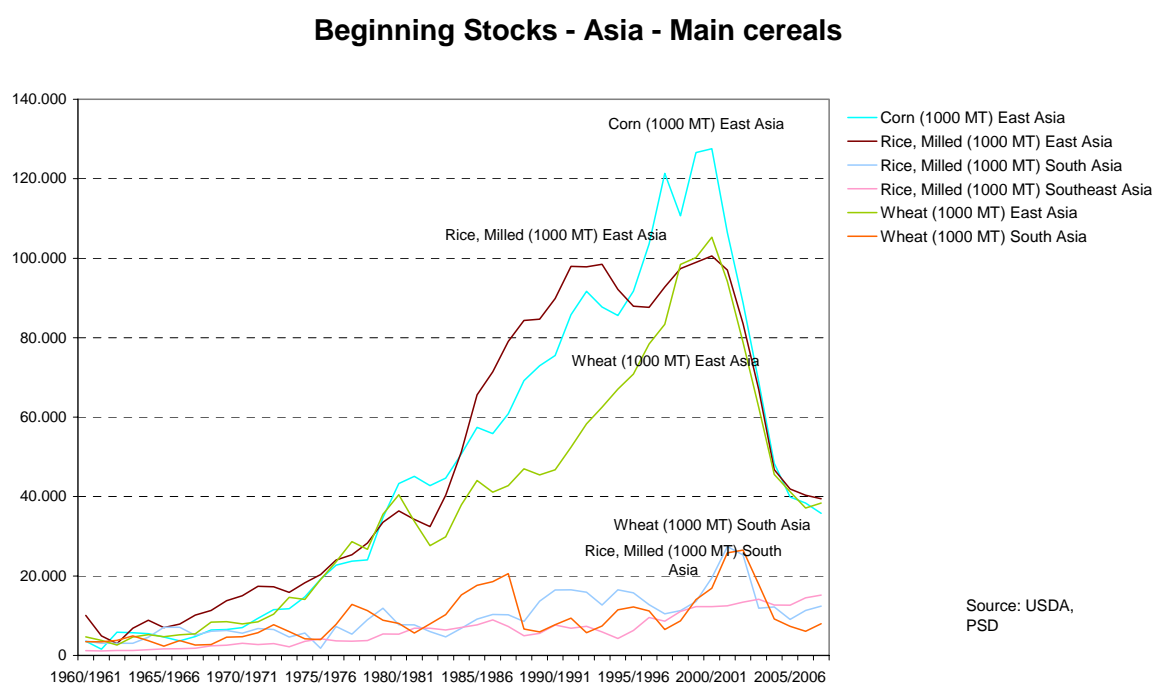


Figure 23:



A striking example of stock disposal occurred in China and India, historically countries in possession of the largest stock levels. Focus on China and India (Figures 24 and 25) reveals relatively steady growth in consumption, slightly more volatile growth in production due to weather related factors, variable area harvested, rapidly declining stocks and low grain imports. The fact that India and China became or are projected to become over the next decade net importers of wheat and maize further adds pressure on world markets and prices.

Figure 24:

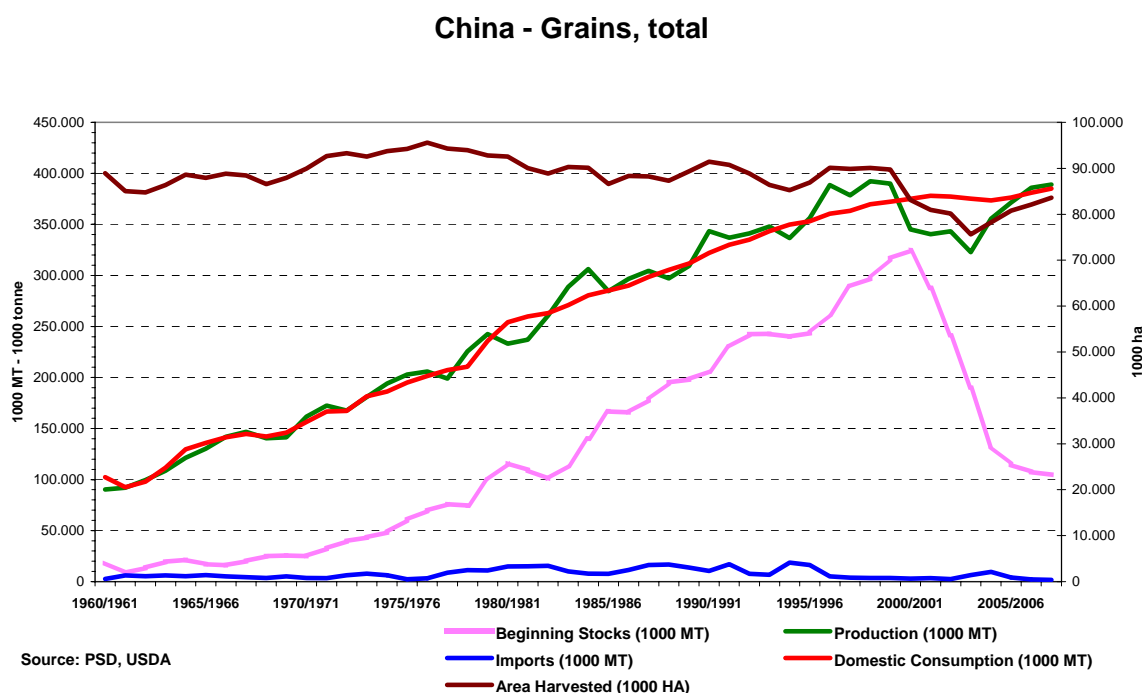
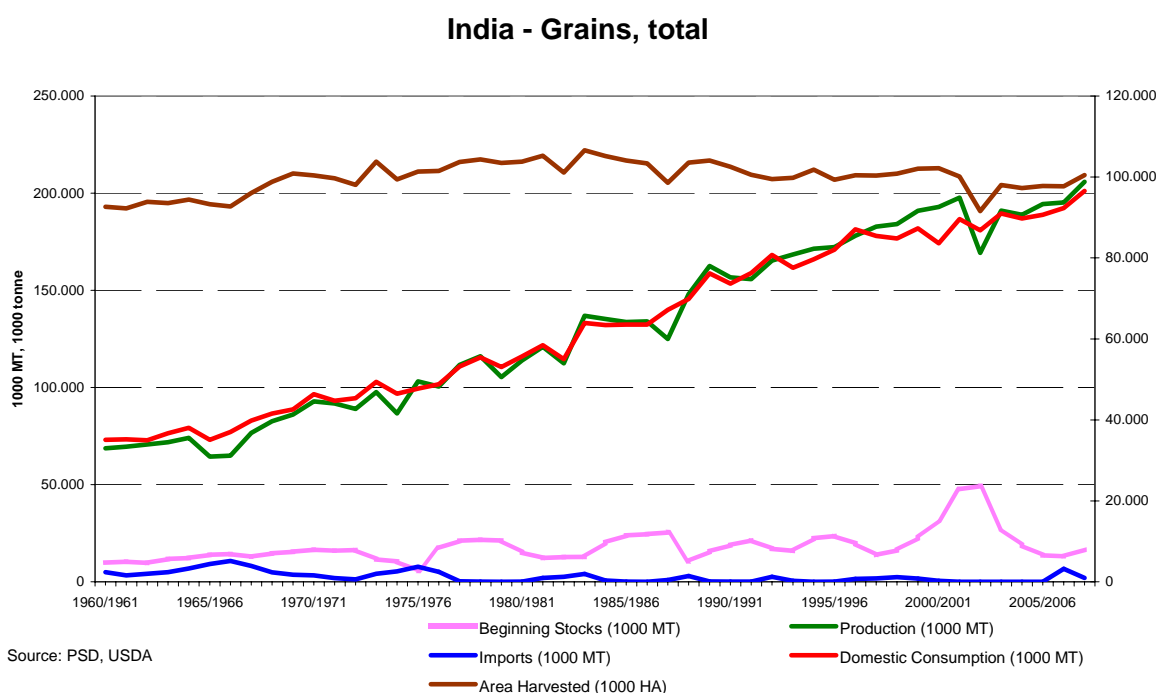


Figure 25:



Following its accession to the WTO and stronger competition between imports and domestic production, China has been trying to restructure its agricultural sector, to produce higher quality wheat in the north and cut back on inferior rice in the south. Certain provinces were shifting from (at times) unprofitable grains to more profitable crops such as fruits, vegetables and flowers. At the same time change in policy called for a reduction of national inventories in the response to low prices. Rapid decline of stocks for grains commenced during the time of low prices, and further depressed the world market prices. In 2000 China dramatically reduced its stocks levels from 45 days to 21 days. An inflow of stock to the world market increased supply available, depressed the

price, and decreased the area harvested while demand continued its steady growth. This, coupled with unfavourable climatic conditions led to a decrease in production. At the same time consumption has been continuing on a steady path due to strengthening import demand in Asia. Simultaneously, production declined in Latin America and the Caribbean. Reduction in stocks in India mostly corresponded to troubled production at home due to bad monsoons. In 2001 the rice price reached its lowest point.

Low stocks in their own right should not lead to permanently higher prices but contribute towards emergence of high prices in the environment of tight and thin markets and provide a background for increased price volatility in the future. Decreasing stocks have resulted in a lack of buffer against sharp changes in the level of production or demand. Coupled with distressed production and growing demand, the situation has changed from abundant stocks got to the one of export controls.

Often responding to political unrests resulting from high food prices, a number of individual countries, both net food exporting and importing, has embarked on building strategic physical grain reserves, often to provide subsidised rations for the most vulnerable. In some countries the exercise is complemented by infrastructure development, such as new silos in India. Physical stocks remain difficult and expensive to manage and losses associated with leakages tend to be significant.

Some advocate reintroduction of commodity funds as supply controls mechanism aimed at building stocks. However, supply building in the environment of high prices increases demand and puts upward pressure on prices.

In particular, the idea of virtual "global goods" stocks to be explored among the G8 and key developing countries, perhaps for humanitarian purposes has been suggested by the World Bank. According to the World Bank, they use financial instruments as opposed to physical stocks providing holders with a right to buy food at a guaranteed price on the world market. More analytical work is needed on assessing alternative strategies, such as the idea of "virtual stocks" including risk management tools.

4.3.2. Agricultural policy and its reforms

Agricultural policy reforms such as reduction of price support and introduction of direct payments require some time for the markets to adjust. An example is the successive reforms of the CAP which have certainly contributed to making agriculture more competitive but they have also produced shifts in production responses between sectors. The reform process played a role in the reduction of public stocks and in the increase in EU imports of certain commodities. The significant cut in support prices is one of the factors explaining why the EU became a net importer of beef, as well as sugar.

Preceding the emergence of high food prices, the EC embarked on the CAP Health Check recognising that market prices are a better driver than intervention prices. By including permanent removal of the set-aside obligation, soft landing period in the dairy sector, and further decoupling for some products, its adoption should provide a supply response that will help to mitigate prices over the medium term. Policy instruments for risk management should help to cope with increased volatility such as the one we are experiencing today.

Decoupling breaks the link between support and production; hence farmers make their decisions on the basis of economic and agronomic criteria. Enhanced market orientation means better responsiveness to price developments. Farmers will increase the production

of commodities for which prices have risen. In addition to the latest reforms, the EC decided to lift immediately the set aside obligation. This, combined with the effects of high prices, should enable an increase in EU cereal production by some 15% for the 2008/09 marketing year.

Choice of agricultural policies also affects markets in an indirect way. In some countries it might lead to abandonment of agriculture, increased urbanisation and problems described under earlier under population and income growths and their implications.

4.3.3. Research and development

Global lack of investment in research and development might hinder the capacity to keep pace with demand growth. In the 1980s the Green Revolution spending reduced. Spending on farming as a share of total public spending decreased by half between 1980 and 2004. Private research, despite its importance, has not deemed to be sufficient in replacing the role of public research, especially in poor countries. Lack of investment in rice during the periods of low prices in the 1990s is a prime example.

Directly related are questions of technological progress, yield stagnation, seed improvement, 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.

Seed improvement is a promising venue of improvement but usually around 10 – 15 years is needed between the introduction and commercialisation of seed varieties (International Rice Research Institute estimate).

4.3.4. Trade-restrictive policy announcements

Responding to the price increases, many countries have introduced measures to protect their population from price hikes. Some of those are restricted to domestic policies, such as price controls or subsidies. Some took more aggressive trade measures and adopted trade policies (such as export taxes or other forms of export stops) that might carry a "beggar your neighbour" element in them and further disturb markets by reducing supply. In addition, in a medium perspective, such restrictions send the wrong market signal, reducing incentives to farmers to invest and increase production.

4.3.5. Energy policies (Biofuels)

Biofuels emerged as an alternative market outlet for agricultural commodities. The rise in demand for biofuels and current biofuel support policies have been sometimes suggested as key factors in food price increases. Analyses show that the impact of the development of biofuels differs depending on commodities used and on the context.

There are strong indications that current EU biofuel production has little impact on current global food prices, as biofuels use less than 1% of EU cereal production. The currently in force EU biofuel policy set a target that is not binding for the Member States. The 10% target of renewable energy in transport by 2020, which has been agreed by the European Council in March 2007, has not been yet implemented. However, such a long lead-time makes it unlikely that this can have had an impact on prices today.

The main source of the increased production of biofuels is the US market. The proactive policy pursued by the US may have had a noticeable impact on the maize market. US

production of bioethanol is estimated to absorb around 25% of national maize production. More detailed discussion on biofuels is presented in Annex III.

In future, energy and climate change policies in general will have, more importantly than in the past, an effect on agricultural commodity markets. The strength of this relation will largely be different depending on the commodity and policy context.

As regards biofuels, the development of more advanced technologies is important to reduce the link with food crops. In this respect, the Commission's directive proposal introduces sustainability mechanisms that promote biofuels from non-food and other non-crop based materials.

4.4. Consequences and possible responses

There is an agreement that the impact of rising food prices on developing countries can lead to mixed results in the short and in the long term. Also, few dispute that the net welfare effect on the global poor is negative, particularly in the short term. Due to distribution across the societies certain groups might be more exposed to the problem of high food prices. Finally, in the medium to long term, rising prices offer new income-generating opportunities for farmers.

High prices are likely to impact food security in developing countries in different ways. If the population relies on food programs, constant funding of many food programs limits the amount of food available.⁹ The impact of high prices depends on whether a developing country is a net exporter or importer of food. A net food importing country's balance of payments will deteriorate, while a net food exporting country's balance of payments will ameliorate. Developing countries that are net importers of food, such as in Africa but also the Philippines, Indonesia and China, are the hardest hit by the crisis. In general developed and emerging countries (Brazil, Argentina, etc) are more likely to be concerned about the inflationary pressures.

Very short run responses include corrective policy measures in form of direct support to consumers, food aid, release of stocks, and efforts to boost production. Although also suffering from its shortcomings, targeted consumption policies might be better suited to address the needs of the poor compared to restrictive trade policy measures discussed earlier.

In the short term, even in the presence of increasing harvest in traditional countries, current high prices will boost plantings. However, due to limited amount of available arable land, it is likely that part of the gains in some crops will come at the expense of others.

Bringing new land into production cannot be done immediately. The CRP (Conservation Reserve Program) land in the United States and the EU set-aside are more quickly available. Arable land abandoned during the transition in the former Soviet Union¹⁰, land available in some African countries and Latin America could be brought into production in the medium term, but needs significant capital investment. Some of this new land is

⁹ There are other factors as well, for example, whether the program purchases locally or internationally and associated increasing transport costs.

¹⁰ FAO suggests re-introduction of land in the former Soviet Union would be relatively straightforward.

also likely to be in environmentally fragile areas, areas likely to be most influenced by climate change, or with water scarcity. Moreover, land that will be added may be less productive than the land currently under production.

Longer term actions might necessarily include responses related to accelerating technological progress, its wider adoption, and sustainable infrastructural investments in developing countries with high agricultural potential. An important part of the global yield potential is still lost because of weeds, pests and diseases. It is estimated that about half of this loss could be avoided through an appropriate management.

The extent to which food prices – or food markets in general – might follow the fundamentals of fuel markets remains to be examined. The strength of this relation will depend mainly on the structural and production capacity of agriculture, biofuel policies, and energy markets. Important in decoupling the food and energy markets are the use of non-food raw materials, the increase in productivity, the adoption of second generation biofuels and the introduction of new land into the production.

In a systematic manner, the Commission communication on high prices sets out key areas for action in three categories – efforts to mitigate the short to medium term impact of price rises, initiatives to increase supply in the longer term, and addressing the crisis at international level.

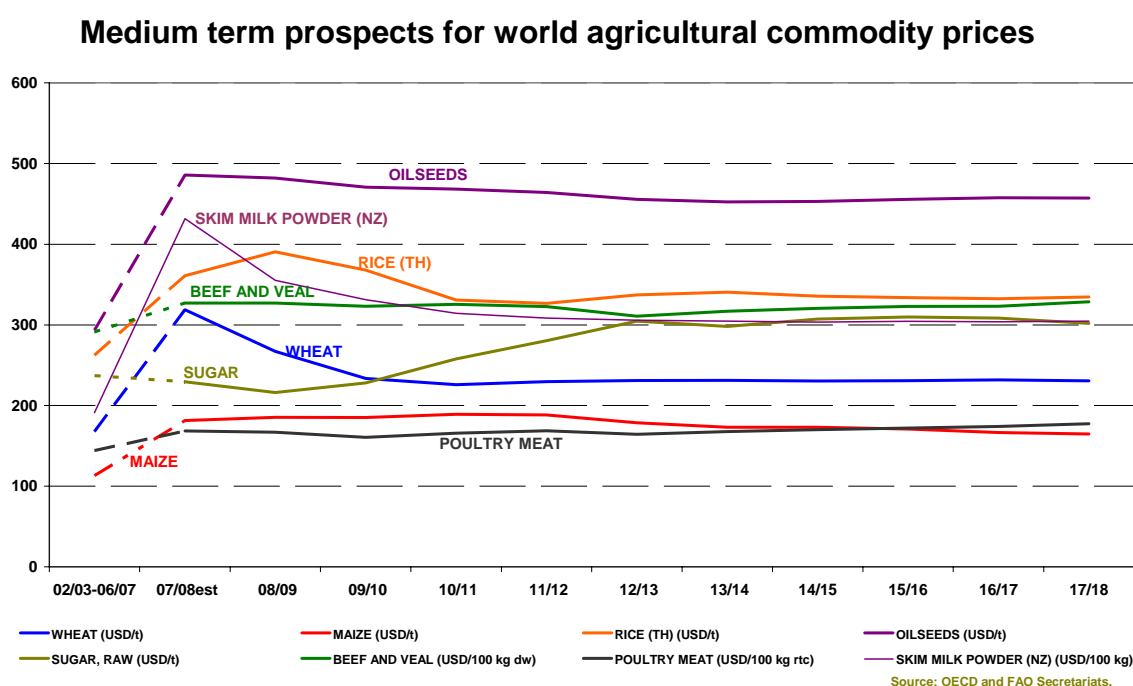
Key actions include:

- Keeping a close watch on price developments.
- A task force on the functioning of the food supply chain – to check if there are any problems in areas like competition, influencing on food price inflation. The task force will produce a report by the end of 2008.
- Adjusting the common agricultural policy, through the measures included in the Health Check.
- A food security programme to build on the existing most deprived persons' food aid programme.
- Promoting sustainable production of biofuels by encouraging international take-up of the same kind of sustainability criteria we have already proposed for the EU.
- Boosting research, using technological progress to help agriculture boost its productivity in a sustainable way. This includes an open – but vigilant – approach to GMOs.
- Scaling up when necessary our food and humanitarian aid to the developing countries most hit by the crisis.
- A new development policy focus on agriculture, including safety nets for the most vulnerable, and extra investment in rural development, food security and agriculture.

5. COMMODITY SPECIFIC ANALYSIS BASED ON FAPRI AND OECD-FAO OUTLOOKS¹¹

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 below the most recent price hikes. Projections vary on the commodity basis. Compared to the historical levels prices of meats in absolute terms did not increase abruptly and are expected to stay relatively stable. However, prices of some crops (e.g., wheat) and of dairy – that experienced the biggest hikes – are expected to ease from their peaks but are likely to remain higher than their past levels. Figure 26 illustrates medium term prospects for world agricultural commodity prices projected by the OECD-FAO. Unless otherwise indicated on the chart, the prices are United States' prices, in current USD.

Figure 26:



5.1. 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

¹¹ The part on prospects of commodity analysis will be further developed in the forthcoming comparison of outlooks, including their differences in macroeconomic assumptions driving results and policy coverage. The analyses in this part are supplemented by USDA when FAPRI and OECD-FAO do not provide detailed information. The part only deals with prospects: a look into past developments is available at http://ec.europa.eu/agriculture/analysis/perspec/index2_en.htm#foodprice.

compared to the average for the past decade. It would reach 450 USD/t by 2017/18. This is less than half the level of prices observed in April 2008. (FAPRI projection 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.

In terms of trends, OECD-FAO outlook seems to follow similar trends as described above, although OECD-FAO prices differ from projected FAPRI prices. FAPRI projects increasing prices (from 358 USD/t in 2008/09 to 450 USD/t in 2017/18) while OECD-FAO expects a decreasing trend (from 391 USD/t in 2008/09 to 335 USD/t in 2017/18).

5.2. 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 biofuels). 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.

Both FAPRI and OECD-FAO agree on the future development of world wheat market, with average production, consumption and trade figures for the outlook period being 10%-14% higher than in the previous decade. FAPRI price projections exceed OECD-FAO price projections (keeping in mind different model coverage and assumption used) by 33 USD at the end of the projection period (231 USD vs 264 USD/t).

5.3. 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 hectares. According to FAPRI, it will continue to increase in the projection period, reaching 163.2 million hectares 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.

OECD-FAO does not provide a detailed breakdown of the coarse grain complex. However, their main developments in the coarse grain sector follow the trends projected

by FAPRI for maize. In terms of prices, OECD-FAO projects a significantly lower maize price at the end of the projection period compared to FAPRI (165 vs 195 USD/t). FAPRI price projections fluctuate around 190 USD/t while OECD-FAO projections reach their peak in 2011 and then follow a decreasing trend.

5.4. Barley and sorghum

In terms of trade volume, barley and sorghum are second and third coarse grains internationally traded. However, the trade volume of barley is only 14% of the trade volume in maize, while sorghum trade volume represents only 10% of the trade volume of maize on the world markets. Barley and sorghum prices in general follow maize prices as they are substitutable as feed grains and are often tapped on in the environment of tight markets. Malting barley commands a premium on the markets.

World **barley** acreage is relatively stable with production slightly increasing due to yield improvements. After a decline in 2007/08, use of feed barley and barley used in brewing and other food and industrial applications is expected to remain relatively flat. Population increases offset declining consumption per capita.

Historically, global barley exports have originated primarily from the EU, Australia, and Canada. The EU and Australia remain main exporters of barley, followed by Ukraine. The EU's barley net exports reach 4.7 million tonnes in 2017/18. Australia's net exports recover from shortages caused by weather conditions and reach 4.7 million tonnes in 2017/18. Share of Ukraine on total exports increases from 8% in 2007/08 to 20% in 2017/18. Reduced barley production in Canada due to area shifts to rapeseed is also influencing Canada's position as an exporter.

Sorghum area changes very little during the projection period. Production increases slightly due to yield improvements. World feed use of sorghum is projected to decrease from the high of 29 million tonnes in 2007/8 (caused by weather related failures of other crops and high prices) to around 26 million tonnes during the rest of the projection period as other crops recover and sorghum prices increase again relative to maize. World food and other use has an increasing tendency.

World sorghum net trade decreases from the current high level of 8.5 million tonnes to 5.7 million tonnes in 2009/10 but later recovers to 6.3 million tonnes by 2017/18. The United States is the largest exporter of sorghum, accounting for around 75% of world trade during the projection period. Mexico and Japan are the leading sorghum importers.

The OECD-FAO Outlook does not provide projections for barley and sorghum, but their projections for the coarse grain complex are roughly in line with the discussion above. Since the reference price used for coarse grains in the model used by OECD-FAO is a maize price, no projections are available for barley and sorghum prices.

5.5. Soybeans and related products

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/t 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/t.

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 world's 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.

The OECD-FAO projects developments for the oilseed complex and thus detailed projections for soybeans are not available. However, their price projections for the oilseed complex remain about 450 USD/t during the projection period. The OECD-FAO projections for vegetable oil prices are slightly over 1000 USD/t while FAPRI projections for soybean oil exceed 1550 USD/t in 2017. Oil meal prices in the OECD-FAO outlook and soybean meal prices in FAPRI outlook converge.

5.6. Rapeseed and related products

Prospects of rapeseed depend on the developments on the grains and oilseeds markets. The rapeseed **price** is expected to decrease next season due to consumption that is projected not to be developing but remains strong over the rest of the outlook period. Crush in the next planting season is likely to be constrained by crushing capacities available. The rapeseed meal price increased by 56% in 2007/08 and is projected to decrease as meal supply and demand move closely together. As other vegetable oils, the rapeseed oil price was record high in 2007/08 but due to slower growth rate of demand, it falls 13.6% in the next season. During the projection period, the rapeseed oil price moves together with soybean and sunflower oil. Vegetable oil prices are expected to stay elevated.

Area planted to rapeseed increased from 28.4 million hectares in 2007/8 (48 million tonnes) to approximately 32 million hectares in 2017/18, mostly due to area expansion in Australia and the CIS. The EU remains a strong producer, holding 39% of the market while China holds 20% production share over the next decade. Net **exports** of rapeseed increase to 9.5 million tonnes over the baseline, with Canada positioned as the dominant net exporter. The CIS emerges as an important net exporter of rapeseed throughout the baseline while the share of Australia decreases. Because of a lack of crushing facilities in CIS, more than 73% of the annual production enters the world market by 2017/18 as a raw commodity.

As the OECD-FAO projects developments for the oilseed complex, detailed projections for rapeseeds are not available. However, their price projections for the oilseed complex remain about 450 USD/t during the projection period, projections for vegetable oil prices slightly over 1000 USD/t, and oil meal prices decrease from their current heights to 307 USD/t at the end of the projection period.

5.7. Sunflower seed and related products

Due to shrinking harvested area in the EU and CIS, the world sunflower **production** decreased by 9.1% in 2007/08 but is projected to recover and grow about 2.2% annually. The CIS remains the largest sunflower producer, producing 40% of world production over the next decade. Argentina maintains its position as the second leading producer in the world, contributing 5.3 million tonnes by 2017/18, following a recovery from the drought in 2006/07. Sunflower area in the EU decreased almost 15% in 2007/08 owing to the increase in the coarse grain area. Smaller area coupled with lower yields resulting from bad weather decreased the production by 30%. Area expansion aided by yield recovery improves total production to 6.3 million tonnes, a 40.4% increase over the outlook period.

Argentina and the CIS are the dominant **exporters** for sunflower seed, oil, and meal, although their relative importance in each category depends on the crushing capacity. By 2017/18, the CIS accounts for almost 80% of world net exports seeds, 48% of meal, and 53% of oil. The EU is the largest net **importer** of sunflower seed, purchasing 36% of all net imports at the end of projection period. Its sunflower seed net imports increase 60.4% over the projection period. The EU also remains the leading sunflower meal and oil net importer, accounting for 38% and 36% of world trade, respectively. China's imports of oil and meal grow, albeit from a small base.

As described earlier, the OECD-FAO projects developments for the oilseed complex and thus detailed projections for sunflower seeds are not available. However, their **price** projections for the oilseed complex (beans and seeds) remain about 450 USD/t during the projection period, projections for vegetable oil prices slightly over 1000 USD/t, and oil meal prices decrease from their current heights to 307 USD/t at the end of the projection period.

5.8. Sugar

World sugar **production** has been growing faster than consumption, keeping stocks at comfortable levels. This is due to the strong and steady increase of production and exports by Brazil, the leading player on the sugar market. As a consequence, world sugar prices did not follow the recent spike of other commodity prices, despite the significant impact of the EU sugar reform on decreasing the EU's production and exportable surplus. Sugar prices surged in 2005/06, due to a shortfall in production. But since then, production has resumed growth and prices have come back below 300 USD/t. Human **consumption** is increasing in the developing world, but the strongest factor of increase has been demand from ethanol in Brazil, which accounts for over 40% of world ethanol production, essentially all from sugarcane.

Prices are expected to increase, going beyond 300 USD/t – 220-230 EUR/t (raw, FOB Caribbean) after 2012. The main reasons are: steady growth in consumption, trade adjustments in EU and the US, enhanced uses for ethanol in Brazil (share of sugarcane allocated to ethanol projected to rise). OECD/FAO confirms that the EU will become a net importer of sugar, even the biggest importer worldwide. OECD/FAO even questions whether LDC/ACP countries will have the sugar available to satisfy the EU's growing import requirements, considering increases in their domestic consumption and biofuel projects.

5.9. Dairy

Over the next decade, total **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.

5.10. Meats

In the last decade, meats market have experienced a generalised and continuous expansion of world consumption in all meat categories, driven by world population growth and increasing per capita income in developing countries, particularly in China.

On the other hand, world meat production was able to smoothly adapt to the increase in the demand. The growth of demand in a given country (e.g. China, India, Russia) was mainly filled by a corresponding increase in the domestic production. However, the rising export vocation of some key players, like Brazil in the beef and poultry sector, also helped keeping the market balanced and preventing sharp price increases.

Against this background, the world meats market is currently only marginally affected by the conditions of tightness and the high prices crisis that have currently characterised the grains and the dairy markets. In 2007, **beef** and **pork** prices registered a modest increase compared to the previous year, whereas for **chicken** the augmentation was somewhat more important (almost +20% in the U.S. 12-City Price), because of the more rapid producers' reaction to rising feed costs.

The growth of the sectors between the average 1997-2006 and the average 2008-2017 amounts to 17% for beef, 15% for pork and 29% for chicken. The development of the three meat sectors within the projection period is lower than in the decade 1997-2006: the annual growth rate drops from 1.6% to 1.3% for beef, from 2.3% to 1.6% for pork and even from 3.7% to 1.7% for chicken.

The OECD-FAO outlook essentially confirms the evolution indicated by FAPRI projections, that is, the continuing growth of the meat sector during the projection period, although at a slower pace than in the past decade. However, the OECD forecasts a slightly quicker development of the sector over the projection period, the global meat production being expected to increase at an average rate of almost 2% per year (2% for pork and poultry and 1.6% for beef).

6. SCENARIO ANALYSES

A question often posed touches upon contributions of individual factors on current price increases as well as projections. Modellers strive to evaluate contributions of individual factors to the recent price hikes and future price developments. However, their assessment is valid only when interpreted within intricacies and nuances of their respective models in *ceteris paribus* conditions. For example, IFPRI estimates that 25 – 33% of the recent price rise is due to biofuels, FAO estimates the contribution to be 10 – 15%¹². World Bank studies suggest that rising energy and fertilizer prices and the falling dollar have contributed about 35% of the rise in world food prices.

To get a glimpse of alternative future and to gauge impact of individual factors, projections often rely on two approaches: (1) scenario analysis and (2) stochastic analysis. Scenario analyses replace original assumptions with plausible alternative values. Stochastic simulation replaces a value, for example a yield or macroeconomic parameter by a range of values.

In the scenario analysis carried out by OECD-FAO, five key assumptions were examined:

- (1) Biofuel use of grains and oilseeds: holding biofuels production constant at its 2007 level would lower the projected price of wheat in 2017 by 5%, coarse grains by 12% and vegetable oil price by 15%.
- (2) Petroleum prices: wheat, coarse grains, and vegetable oil price projections are highly sensitive to the petroleum price cost assumption and amplify the impact of a higher demand on prices. Under the constant oil price assumption, the prices of maize and vegetable oil are about 10% lower and the wheat price falls by 7% in 2017 when compared with the baseline.
- (3) Income growth in China, India, Brazil, Indonesia, and South Africa: reduction of growth in those countries by half gives wheat and coarse grain prices that are only modestly (1 – 2%) below the baseline. The simulated price effect for vegetable oils is 10% due to greater influence of those countries on the world trade and higher income elasticity of demand.
- (4) the exchange rate of the USD: the progressive appreciation of USD exchange rates reaching rates 10% higher in 2017 than assumed in the baseline resulted in the projections for wheat, coarse grains and vegetable oil prices 5% below the corresponding baseline projection.

¹² Farm Policy 20 April 2008

- (5) Crop yields: the cereal and oilseeds yields were assumed to be 5% higher leading to projected wheat and maize prices for 2017 that are 6 and 8% lower than the baseline, but resulted in a little difference for projected vegetable oil prices.

Stochastic analyses provide a more balanced and comprehensive look at the underlying uncertainty of projections. For the projected price of maize in 2008, the 10th percentile is 146 USD/t and the 90th percentile is 204 USD/t. The corresponding values for wheat are 244 and 296 USD/t. In both cases, percentiles grow further apart in 2017, reflecting the compounding effect of uncertainty.

7. LONG TERM PROSPECTS OF HIGH PRICES BASED ON FORECASTS FROM FAPRI AND OECD-FAO

Analysts seem to agree that the era of low prices might be behind us, although the current level of extremely high prices is relatively temporary in nature. Some of the projected forecasts are already lower than futures for many commodities demonstrating that market participants believe that market prices will stay high. They seem to recognise that it is unlikely that food commodity prices would return to the lows of previous decades with climate change restricting growth of food supplies (due to uncertain yields, shifting production zones, water scarcity) while world demand continue to grow. However, medium term models are not well-suited to answer questions about price development in the short run. Forecasts on the medium run already underestimated the current increase in prices.

Medium terms models are not well suited to grasp the impact of short term disturbances and price volatility. In the shorter time frame the increase in prices seems to be driven by supply constraints which many believe are temporary in nature. To prepare their projections, analysts assume return to normal weather conditions, and thus their projections are driven by some of the structural factors affecting demand, namely increases in income and population.

However, based on earlier forecasts that did not seem to materialise for example following the oil shock of the 1970s or the situation just before the Asian financial crises, forecasters are hesitant to predict whether current high prices form a new plateau.

In the longer run, technological progress is likely to overcome some of the restrictions and ease upward pressure on prices. In the medium and longer run, high prices have the potential to promote investment and higher productivity in agriculture world-wide. Slower rate of growth, albeit not desired, can have the potential to reduce demand for commodities and soften upward pressure.

Development economists stress the need of supply response in developing countries that would have many synergies: boosting rural employment, improving incomes of poor, ameliorating self-sufficiency. In addition, potential for yield improvement in developing countries is higher than in the developed countries which might have already reached diminishing returns. However, they fear that current high prices of agricultural inputs, such as fertilisers, might hinder the potential. Smallholders are further disadvantaged by access to financial markets to secure loans as well as access to marketing chains to market their production.

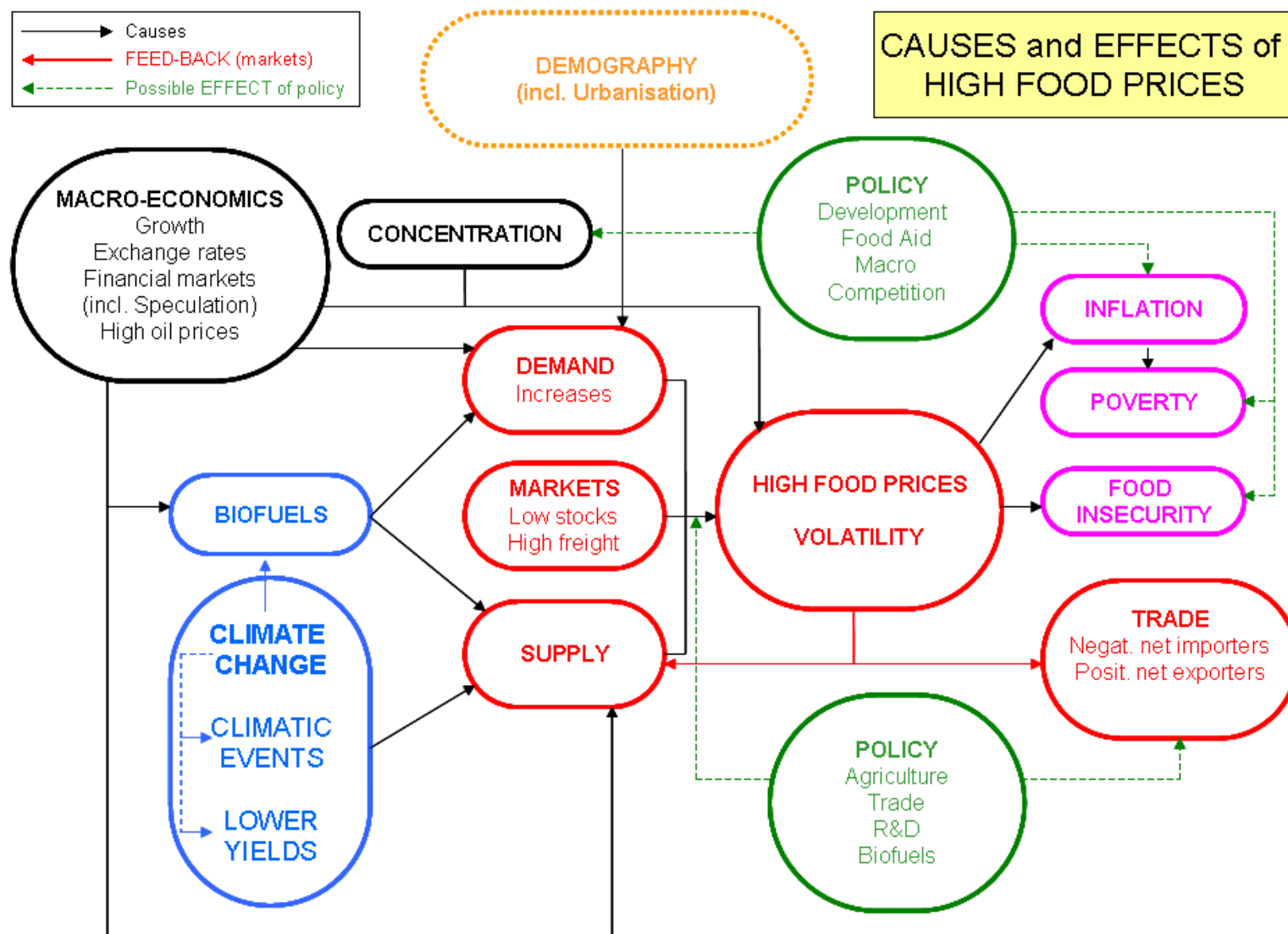
Finally, while supply response is crucial in mitigating high prices, abundant response might lead into another low-price environment experienced in the 1980s, following high commodity prices of the 1970s.

The character of demand is also playing an important role in the future price levels and volatility. Demand for some industrial uses (for example, biofuels under mandates) tends to be inelastic. Demand for food and feed also becomes less elastic as incomes raise and food bill contributes a smaller share in household budgets.

Contributing to the uncertainty of their forecast is an increasing number and occurrence of uncertain factors compared to previous projection periods. Among those are:

- (1) global economic environment, including economic and population growth, development of exchange rates, etc. Global economic environment also influences the level of capital flows into commodity markets.
- (2) petroleum prices
- (3) evolution of energy policies (biofuels)
- (4) research and development, technology, including in the domain of second generation biofuels, evolution of yields
- (5) potential introduction of new land into production (although might be risking they could be in environmentally prone areas likely to be most affected by climate change)
- (6) developments in agricultural and trade policies
- (7) climate change and weather related factors, both short term and longer term, such as water shortages, increases in global temperatures,
- (8) addressing issues of climate change, creation of carbon sink markets (if ever) will also be competing for land (food and feed, energy, carbon sequestration).

8. ANNEX I: CAUSES AND EFFECTS OF HIGH FOOD PRICES



9. ANNEX II: FUTURES MARKETS

Data from the Commodity Futures Trading Commission compiled from various reports market participants are required to file show that there are significant changes in the growth of open interests (number of futures contract that have been bought but not yet sold back [long positions] or sold but not yet bought back [short positions]). The report is mandatory for those who open interests at the end of a trading date exceed certain amount, and thus is not filed by those with large volumes of activity but low open interests at the closing.

Table 1. Open interest of commercial and non-commercial traders: selected futures markets, February 2005 vs. February 2008

(Number of contracts – futures only, with percent shares)

Futures	Maize	Wheat	Soybean	Sugar
Total open interest				
2005	657 417	222 752	272 127	400 084
2008	1 452 992	449 237	596 447	979 085
Commercial – long				
2005	405 269	123 462	161 938	175 234
2008	662 465	218 258	255 864	543 496
% Commercial				
2005	61.6	55.4	59.5	43.8
2008	45.6	48.6	42.9	55.5
Non-commercial – long				
2005	111 064	62 382	54 181	139 133
2008	627 987	189 946	274 440	330 289
% Non-commercial				
2005	16.9	28.0	19.9	34.8
2008	43.2	42.3	46.0	33.7
Non-commercial–net long				
2005	-114 265	-41 939	-78 161	78 007
2008	356 258	19 717	152 362	162 412

Notes: Long open interest is reported for commercial and non-commercial traders.

Contract sizes: Corn, Wheat and Soybeans – 5 000 bushels; Sugar – 112 000 pounds.

Data for the ICE Sugar #11 contract is presented.

Sources of data: Commitments of Traders Reports; Commodity Futures Trading Commission; February 8, 2005 and February 12, 2008.

Table adapted from OECD, TAD/CA/APM/CFS/MD(2008)6

Table 2. Open interest of commercial, non-commercial and index traders: selected futures and options on futures markets, February 2008

(Number of contracts – futures and options combined, with percent shares)

Futures and options	Maize	Wheat	Soybean	Sugar
Total open interest	2 099 426	607 963	841 245	1 291 206
Commercial – long	506 135	64 192	131 868	312 159
% Commercial	24.1	10.6	15.7	24.2
Non-commercial - long	945 082	279 083	407 037	445 874
% Non-commercial	45.0	45.9	48.4	34.5
Index traders – long	423 647	219 807	201 389	400 918
% Index traders	20.2	36.2	23.9	31.0
Index traders – net long	392 163	190 402	192 657	357 586

Notes: Long open interest is reported for Commercial, Non-Commercial and Index Traders.

Contract sizes: Corn, Wheat and Soybeans – 5 000 bushels; Sugar – 112 000 pounds.

Data for the ICE Sugar #11 contract is presented.

Source of data: Commitments of Traders Supplemental Report; Commodity Futures Trading Commission; February 12, 2008.

Table adapted from OECD, TAD/CA/APM/CFS/MD(2008)6

Table 3. Open interest of banks: selected futures markets; February 2008

(Number of contracts – futures only; with bank counts and percent shares)

Futures	Maize	Wheat	Soybean	Sugar
US Banks				
Number	2	1	2	2
Long positions	14 472	7 264	6 118	8 782
% of total	1.0	1.6	1.9	0.8
Net long	3 459	7 143	-1 004	5 800
Non-US Banks				
Number	13	15	13	11
Long positions	105 316	47 076	32 913	85 682
% of total	7.2	10.2	5.5	8.2
Net long	93 475	41 090	30 078	47 183
All Banks				
Net long	96 934	48 233	29 074	52 983

Notes: Long open interest is reported.

Contract sizes: Corn, Wheat and Soybeans – 5 000 bushels; Sugar – 112 000 pounds.

Data for the ICE Sugar #11 contract is presented.

Source of data: Bank Participation Report; Commodity Futures Trading Commission; February 5, 2008.

Table adapted from OECD, TAD/CA/APM/CFS/MD(2008)6

10. ANNEX III: GLOBAL BIOFUEL PRODUCTION

Global biofuel production expanded considerably in the last few years. The market is dominated by ethanol, the production of which increased from about 30 million tonnes in 2005 to 49 million tonnes in 2007. During the same period biodiesel production increased from 3 to 8.5 million tonnes.

The main expansion of ethanol occurred in the US, which doubled its production from 13 to 26 million tonnes (9 million tonnes in 2003) and has by far overtaken Brazil. **The US and Brazil cover about 85% of global ethanol production**, followed by the EU with a 7% share. For **biodiesel, EU share of global production is about 63%** (5.3 million tonnes). The US is the second largest producer of biodiesel, with about 1.3 million tonnes. Argentina, Brazil, Indonesia and Malaysia follow with minor volumes.

Brazil, US and EU biofuel policies and markets

1. **Brazil** produces ethanol from sugarcane and its expansion is driven mainly by strong domestic competitiveness with gasoline and export market outlets. From 2005 to 2007 its ethanol production increased steadily by about 25%, **reaching about 15.5 million tonnes**. The proportion of sugarcane processed into ethanol has remained rather stable in the last three years around 48-52%. Net exports, mainly to the EU and US, represent about one-sixth of its domestic production.
2. The **US** produces ethanol from maize, and its expansion is mainly driven by subsidies and increasing yearly mandates. The Energy Policy Act (2005) specified minimum amounts of ethanol to be used, starting with 12 million tonnes in 2006 and raised in increments of 2.1 million tonnes each year up to 2012. From 2007 more ambitious mandates have been set, requiring **27 million tonnes in 2008, with yearly increases up to 45 million tonnes for conventional biofuel** (maize-based ethanol) in **2015**. In addition, an increase up to a total of 108 million tonnes from 2015 to 2022 will have to be achieved with advanced biofuels, including cellulosic ethanol. In addition to the mandates, the US ethanol program grants a federal tax credit of about 100 €/tonne. This subsidy has been tailored to make ethanol competitive with gasoline at an oil price around 20-30\$/bb. With a crude oil price above 100\$/bb this fixed subsidy can be assumed to put pressure on maize prices.

The US ethanol market is protected by a relatively high tariff. A capped duty-free-quota is granted to some Central American countries. Total net imports have dropped from around 10% of the internal market in 2005 and 2006 to 4.5% in 2007.

The rapid expansion of maize-based ethanol production has affected domestic demand, exports, consumption, and allocation of land among different crops. **Consumption of maize for ethanol doubled from 2005 and 2007, reaching about 25% of the total US maize production**. Following the rapid expansion in demand for maize, production swiftly reacted, and in 2007 increased by one-fourth. Area planted to maize increased by 22% and yields by +1.2%. **The rise in production has been sufficient to feed the growing ethanol industry and slightly expand exports, feed consumption and ending stocks.**

The expansion of the **area planted to maize has displaced other crops, especially soybean**. US soybean area decreased by about 16% from 2006 to 2007, together with a drop in yields (-3.5%), which induced a significant decline in production (-20%) and exports (-6%). This decline coincided with adverse weather conditions in major oilseed exporting countries (i.e. Argentina, Brazil, and China), which have caused a decrease in global soybean production by 6%. Lower production combined with a significant increase in global demand brought global stocks down by one-fourth.

3. The EU produces ethanol from a **broader range of raw materials**, namely wheat, barley, rye, maize, and sugarbeet. Its expansion is driven by a combination of national subsidies and, more and more, by national mandates. **Subsidies are regulated by State Aid rules** which forbid levels of support higher than the gap in cost competitiveness with the replaced fossil fuel. **The new RES-D proposal sets a 10% binding target for the share of biofuels by 2020. No specific intermediate/yearly mandates are proposed.**

The EU ethanol market is relatively protected by tariff. In spite of this, in 2007 the EU imported about 1 million tonnes of ethanol¹³, which represents an estimated share of about one-fourth of the whole ethanol domestic market.

In 2007, the increase in EU fuel ethanol production has slowed down to +11% compared to 2006, achieving 1.4 million tonnes. **Cereals processed into ethanol have dropped to 1.9 million tonnes**, from 2.5 million in 2006 and 2.7 million in 2005. In 2007, cereals processed into ethanol represented about 0.75% of the EU usable cereal production. The main cereal used in the EU is wheat.

The EU is producing a significantly larger amount of **biodiesel** (5.3 million tonnes). **Growth in the EU output, which previously has increased rapidly, slowed down considerably in 2007** as a consequence of high raw material prices and trade factors (+15% in 2007 compared to +65% and +40% in the previous two years), leaving more than half of the industrial capacity unutilized. As a consequence, **oilseed demand for biodiesel has slowed down**, reaching in 2007 about 9.2 million tonnes of oilseed, mainly rapeseed (80%).

The EU market of vegetable oil and oilseed is practically unprotected from the world market. Given that and the fact that the different vegetable oils are substitutes, the impact on the vegetable oil market of biodiesel production can be estimated to be limited as the **EU biodiesel consumption represents about 5% of the global vegetable oil production**.

¹³ This figure does not cover other imports of fuel ethanol in form of blends with fossil fuels.

Cereals consumption for ethanol and other uses

