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NOTE TO THE FILE

Subject: What caused the present boom in agricultural prices?

1. INTRODUCTION

The very rapid and dramatic increase in world agricultural prices has made its impact felt in a rather extensive list of other interrelated areas all the way to the final consumer. Yet the causality attributed to what is already termed as the "food crisis" generates one paradox:

- *Why were the largest increases in agricultural prices observed in wheat and rice, two commodities where the two major causes used to explain the recent price increases (demand for biofuels and demand in China/India) have had the smallest impact?*

The above observation may seem counterintuitive in the current context of the public debate, but is nonetheless indicative of the complexity in understanding the reasons behind the recent surge in commodity prices, and of assigning the appropriate weight and significance to the various factors involved. Demand growth in China and India explains of course developments in many sectors; so does the increased demand for biofuels.

Supply constraints from weather or from policies, exchange rates and increased speculation in commodity markets, all have also played a role in the recent price boom. But the degree by which each factor explains things, and the reasons for which some developments are even harder to explain at this stage, varies a lot by commodity and by region.

To identify the causes behind the recent price boom, this note looks at a list of agricultural commodities, described in the annex, and attempts to identify the causes of the recent price increase by comparing them to past developments and to the more recent path of price variation, focusing on supply and demand factors that affected price developments, and drawing the linkage of the recent agricultural price boom to developments in other commodity markets and macroeconomic factors.

2. WHAT LESSONS FROM THE PAST?

Price hikes are a normal feature of commodity, including agricultural, markets. Unpredictable in nature, when they occur generally draw wider publicity than the deep price troughs that almost always succeed them because the impact of high prices has more immediate implications. Yet such events occur in the context of a long-term declining trend of agricultural prices, and the present price surge is the 5th such event witnessed in grain markets since the oil crisis of 1973. Despite their significant increase, recent prices for all major agricultural commodities are, in real terms, below their comparative levels of either 1973 or 1979 oil crises.

One common feature of price surges is that they often lead to the conclusion that they represent a new situation expected to last in the foreseeable future. Yet ex-post analysis reveals that there is no common pattern in the emergence of such price surges or their duration. A boost in demand clearly plays a role in any price increase, but changes in consumption patterns are generally smooth in nature.

As a result, demand growth could explain why in some commodities and regions prices may reverse their generally downward long-term trend, but cannot explain why price surges occur in the span of a few months.

It is generally on the supply side that the reasons for price surges are to be found. An abrupt climatic shock that affects supply in a major producing region widens the gap between demand and supply of basic staple food commodities. Stocks, whose role is to bridge this gap, are consequently drawn down, and prices fall. Other times, policy changes also impact upon prices of certain commodities by limiting supply. In both cases, the resulting price surges usually are short-lived, as high prices act as a natural "cure" for high prices by providing the best incentive for an increase in supply (either domestically or among competitors).

Macroeconomic shocks (such as oil price crises or exchange rate fluctuations) also impact upon the cost of food commodities, and thus their price, often regardless of the level of their supply. During the three decades after the 1973 oil shock and interrupted the post-WWII long period of declining commodity prices, all previous agricultural price surges found their own path of adjustment towards more normal price levels mainly through a supply response.

3. WHAT REASONS AT PRESENT?

Is their evidence enough to suggest that the recent price surge could follow a similar path with previous ones? The answer this time around seems so uncertain because the recent price boom is characterised by several parallel developments that simultaneously push in the same direction – that of adding pressures to increase prices:

- Supply has been lagging behind demand in a series of agricultural markets
- Energy and fertiliser prices are increasing faster than agricultural prices
- The dollar decline and/or export bans reduce supply response by major exporters
- Bio-energy policies increase demand for agricultural commodities.

4. SUPPLY AND DEMAND DEVELOPMENTS IN MAIN AGRICULTURAL MARKETS

4.1. Food grains – recent supply shocks but slow demand growth

World wheat production has stayed below world consumption in wheat during the last 6 years. This development is not due to changes in demand, which has continued increasing at a rather constant pace (while the combined consumption of China and India even declined since 2000) but to the significant production shortfall in major suppliers (Australia faced 3 severe droughts in the last 6 years, but EU Russia and Ukraine we also affected more recently).

As a result, world stock declined significantly during the same period, thus contributing to the increase in prices. Yet prospects for recovery in world production are already evident in all major players, and especially among the main exporters. Positive policy contributions could come from the abolition of set-aside in the EU and of export taxes in Argentina, Russia and Ukraine, but climate patterns introduce a source of uncertainty mainly in another major exporter, Australia.

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

4.2. Maize and oilseeds – the impact from biofuel demand

In maize, an acceleration of world consumption is evident since 2003, driven by the increased use of maize for ethanol in the US and increasing maize imports in developing countries, mainly China and Mexico. In the US, growth in non-feed use of maize jumped by 63 mio mt during the last seven years (2001-2007), while it had grown by just 10 mio mt during the preceding five years (1995-2001), with the corresponding increase in US biofuel from maize equalling the annual maize production of Brazil.

The subsequent price increase led to a strong supply response in the US, China, Brazil and Argentina, where production seems to be following demand growth. Trade has not been affected much, with the US even exporting more maize (at the expense of much lower stocks).

But most of the impact has been felt in the rapid decline of stocks, which have reached such a low level that leaves no space for buffering future shocks. From the other exporters, only recently have Brazil and Argentina responded to world demand, while China's exports have been fluctuating on a downward path, depending on whether its annual production met its growing internal demand.

Developments in maize are also linked to developments in the oilseed complex, with significant annual variations in the area maize/soybean rotation in the US. A 10% decline in US maize area from 2007 levels, with a parallel shift to soybeans, could represent a similar part of world production (roughly 4% for each commodity), but has a completely different impact on consumption (with the corresponding 33 million mt of maize clearly impacting both feed and biofuel demand more than their equivalent 10 mio mt of soybeans).

This takes place at a time of strong demand coming both from feed use of soybeans and soybean meal in China, and also from strong demand for vegetable oils and palm oil, mainly for human consumption but recently also some for biodiesel. Both production and consumption for soybeans, the dominant crop in the complex, grew very fast during the 1995-2007 period, at a pace of around 5% annually. With demand in the EU and Japan stable, the rapid increase in Chinese imports has been met by increased export from US, but especially from Brazil and Argentina.

In vegetable oils, use for domestic rapeseed oil production for biodiesel and its impact on food oil consumption has turned the EU into a net importer of rapeseed and sunflower oil. In total, vegetable oil use for biodiesel represents close to 8% of world consumption of the four main food oils (soybean, rapeseed, sunflower, and palm oil)

Part of the gap in the food oil demand created by biodiesel has been filled by palm oil, whose production and consumption have also increased significantly in recent years, with total palm oil imports in China and India increasing threefold within a decade. Yet total exports of Malaysia and Indonesia to the world increased by 250 % over the same period, and production is increasing faster than consumption.

4.3. Sugar and cotton – long-term downward price trends mainly unaffected

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

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

4.4. Meats – strong demand, but stronger supply growth

In beef, consumption growth in Russia, China and India is strong, but production response is even stronger in Brazil and Argentina, while other major exporters also increase their exports replacing the gap left by declining production in the EU. Thus growth in this market does not generate major price pressures, especially because a significant part of the growth in the cattle herd is grass fed and the overall level of world production and consumption growth is moderate at around 1.3%.

The growth in pork and poultry consumption, on the other hand, is stronger, particularly in China. Exporters have in general responded to this growth, thus

keeping price increases at more moderate levels. But the price impact is felt in feed costs, which are increasing both because of the general increase in production costs and because of the additional demand for feed (mainly maize and soybean meal). In both of these meats, production has clearly kept pace with consumption, with an implied annual increase in feed of around 20 mio mt.

4.5. Dairy – first sector to phase price spike, and to witness supply response

The dairy sector was the first to face a significant increase in prices, driven by strong demand growth in a rather “thin” world market (less than 10% of dairy products are trade), and has become the first sector to witness a significant supply response. In the EU, and especially in the US (less constrained because of the absence of quotas), strong production recovery has led domestic prices to return towards more normal levels. In other main exporters, the impact from drought in Australia, and to a lesser extent from area constraints in New Zealand, is still felt to some extent, and has resulted in sustaining world prices at high levels.

The sector is also characterised by significant structural changes. In general, dairy products continue their shift away from fat towards protein, with the EU continuously losing export market share to Oceania, which exports most of its milk production in the form of dairy products. In cheese and butter, production generally follows consumption in the main producer countries, while milk powder production is concentrated in developed countries and consumption in the developing ones.

5. SOME TENTATIVE CONCLUSIONS ON THE RELEVANCE OF DIFFERENT FACTORS

Although their simultaneous impact complicates the attribution of the recent price spike to any individual factor, the following tentative conclusions, summarising the results of the present analysis, identify what seems to be the role of different factors in different agricultural markets:

- supply (mainly weather) factors played a major role in the recent increase of prices in food grains (namely wheat and rice) and in the dairy sector;
- supply response in several sectors (meats, cotton, sugar) is stronger than demand pressures, and explains why price increases in these sectors were more moderate;
- demand factors explain upward price pressures in maize and vegetable oils;
- the annual increase in maize and soybean meal production appears to be twice as high than the implied increase in feed use stemming from the annual increase in meat consumption;
- bio-energy policies have an impact on the prices of maize (ethanol use in the US) and vegetable oils (biodiesel use in the EU), which are accentuated by parallel effects from other factors (feed demand for maize, decline of US soybean oil use);
- the increase in energy, fertilizer, and in some cases land prices, is stronger than output prices, complicating farmers supply response;
- the appreciation of the US dollar limits price increases in many exporters' currencies, thus mitigating to some extent the required supply response;

- policy responses have given a mixed signal – positive from EU (dairy quota, set-aside), negative (from export restrictions) in several developing world exporters, neutral (with unchanged policies) from the US.

6. HOW COULD THIS END?

The present situation differs from normal, agricultural price hikes in that it is taking place in parallel with a generalized boom in all commodity prices and a depreciation of the dollar, the currency at which all commodities are traded. These factors, together with the additional impact from the new role of index funds, whose current long positions have put additional upward price pressure in those markets more open to trading, have exacerbated the upward trend in agricultural prices beyond what is explained by developments in these markets.

When this will change is, of course, unclear. There are indications that production is already responding in food grains, exactly the markets that have had either the biggest supply shocks (wheat) or the most dramatic responses (rice). It will take more than one harvest to replenish world stocks, and nominal prices may stay higher than in the recent past. In other commodities, such sugar and cotton, as well as beef, the impact on prices has been clearly more limited.

There are also clear signs that in other agricultural markets, such as sugar and cotton, meats, or dairy, developments are not characterized by any drastic long-term shifts that differ from what has been observed in the recent past. Some supply shocks (such as the impact of the Australian drought on world dairy prices) have been observed, but supply is recovering, especially in the EU and the US. Meat markets face a much more robust supply response, mainly from Brazil.

But the maize/soybean complex needs more time to readjust before markets clear at lower levels than today because of the simultaneous impact that developments in biofuels policies have put on US area use and to a lesser extent on world vegetable oils from the impact of EU biodiesel growth. The recent annual shifts between US maize and soybeans, in particular, seem to add to price variability.

Policy responses have played a mixed role in the present price hike. The removal of EU supply controls in cereals (set-aside) and dairy (increase and phasing-out of quotas) will certainly mitigate pressures in these markets. The removal of export bans would also help, particularly in markets where such measures are applied abruptly, with the opposite price effect in world markets than in domestic markets

Finally, significant uncertainties surround the potential impact from developments outside agriculture. The increase in energy and fertilizer costs, the increasing impact of higher land values on farm debt, the appreciation of the dollar, all act in the direction of hampering supply response. So does the long-term decline of investment in agricultural productivity. The combined impact of these factors may, at the end of the day, may explain much more of the price spikes than any market fundamentals.