

VITAL COMMODITIES: SHORT TERM

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Thomas Malthus, one of the early economists, theorized that population would grow exponentially to outpace food production which he assumed could only grow arithmetically. He concluded that food production would serve as the limit to world population growth and predicted mass starvation. For 200 years Malthus was proven wrong as advances in technology overcame the fixed land constraint to keep ahead of global population growth. Now a world population of about 6.7 billion; a five-year draw down of global grain stocks; and constraints on food-production critical resources such as energy, water, and arable land, have people wondering if Malthus might have been right after all.

Sharp increases in commodity prices over the past year or so have raised concerns about food and energy security, weather variations and global warming, sustainable country and global economic growth, trade flows and currency valuations, speculation and commodity price bubbles, and geopolitical stability. Trends and tendencies suggest convergence of many of these issues. The popular media, which tend to stress sensational form over factual content or try to politicize such issues, too often get it wrong. This is the first in a series of paper that will examine the facts to provide unbiased information for practical decision making. While in-depth analysis of all the issues is beyond the scope of the papers, basic analysis should suffice to point out implications for the future and highlight needs for further analysis. Correlations, counter-influences, and linkages will be noted where possible.

On the supply-side, a combination of weather-reduced yields, insufficient expansion of plantings, dwindling irrigation water, bans on the planting of genetically improved seed, lack of inputs, government-imposed low producer prices, infrastructure that restricts access to markets, and high export taxes in some countries have contributed to sub-optimal levels of production. On the demand side, growing population growth, improving economic prosperity in developing countries, government subsidized low food prices, and relaxation of barriers to trade have caused livestock protein and grain and oilseed product consumption to increase steadily. High commodity prices have not reined in demand which illustrates that for human consumption, quantity demanded tends to be price inelastic. Furthermore, rapidly growing new demand bases

for feed grains and vegetable oil to produce bio-fuels; ethanol and bio-diesel, and other industrial products, are keeping upward pressure on prices of those commodities.

Energy-related, crop production input costs have taken a quantum leap upward with unprecedented price increases for fuel, fertilizer, and agricultural chemicals with no accompanying increases in productivity. The prices of other inputs such as genetically-improved seed, large-scale equipment, etc. have also increased but can be justified by yield improvements or unit cost reductions. As a consequence, the breakeven prices of major agricultural commodities have increased. The approximate breakeven farm price per bushel for corn is now about \$4.00; for soybeans, \$7.00; and for wheat, \$5.00. In the absence of a significant drop in the cost of energy-based inputs, these breakeven prices will serve as long term price floors for corn, soybeans, and wheat as farmers around the world respond to high commodity prices by expanding production.

For the 2007/08 crop production and marketing year, assuming 'normal' weather conditions for the remainder of the growing season, the United States will produce about 15 percent more wheat than last year; a year during which export demand for quality milling wheat drew down U.S. ending stocks to a 62 year low. Because of the response of farmers around the world to high wheat prices, and good growing conditions in Russia, Ukraine, and China, global wheat production will increase about 9 percent to an all-time high. As harvest progressed and added to global supply, wheat prices dropped from their highs. But, increased demand for human consumption, for feed wheat, to refill supply pipelines, and to rebuild wheat reserve stocks in many countries will absorb the increased wheat supply to keep price relatively high through the remainder of the wheat marketing year compared to historical averages. If the Southern Hemisphere dryness in Argentina and Australia continues, wheat price may strengthen.

The size of the U.S. corn crop is still in doubt, even though producers planted 1.3 million more corn acres than anticipated. Late planting, soil compaction and fertilizer leaching due to high rainfall, and pollination during the heat of mid-July has many wondering if yields may turn out lower than the 148.9 bushels per acre projected by the USDA. At the time of this writing, benign Corn Belt weather had allowed the corn condition to improve and long range weather forecasts that appear to be favorable had some predicting near trend line yield of about 154 bushels per acre. Globally, China, the Philippines, Russia, and Ukraine are on track to produce better than expected crops of coarse grains this year; corn in China and the Philippines; corn and barley in

Russia and Ukraine. Even so, global coarse grain production is projected to fall by 5.5 million metric tons (about 217 million bu.). On the demand-side, global coarse grain usage is expected to increase by 22.5 million metric tons (about 886 million bu.), largely due to increased feeding of pigs in China as that country recovers from swine disease problems. The result will be a drawdown of global coarse grain reserves of about 17 million metric tons (677 million bushels) that will put upward pressure on feed grain prices, although increased feeding of wheat to livestock will ease the situation somewhat. Feed grain prices are likely to remain relatively high throughout the 2008/09 growing and marketing year with possible upward spikes as adverse weather news impacts the markets.

More than 90 percent of the world's exportable soybeans are grown in the Americas; North and South. Global demand for the products is growing rapidly: soyoil for human consumption, soy meal for livestock feeding and components of both for human foods and for industrial purposes, including the production of bio-diesel. In recent years, global demand for soybeans has increased an average six percent per year, but production has been increasing only 4.5 percent per year. That resulted in a draw-down of global stocks that contributed to historically high soybean prices. In the 2008/09 crop year, United States producers expanded soybean acreage by 19 percent to bounce back from a reduction in acreage the previous year. But the U.S. soybean crop has been slow to respond to the benign Corn Belt weather that has helped the corn crop. There is a concern that because of late planting, a normal first frost date in the Northern Corn Belt may reduce soybean output to below the already low USDA national average yield projection of 41.6 bushels per acre. Global production of oilseeds – soybeans, rapeseed, and sunflower - is expected to increase 11 percent in 2008/09 in response to strong market demand and high prices for the products – oil and meal – made from those seeds. However, there is uncertainty about Brazilian planting of soybeans this fall with estimates ranging from 2.1 to 4.5 percent increase over 2007/08. The standoff in Argentina between farmers and the government over high soybean export taxes has finally been resolved, allowing Argentinean soybeans to flow into the export market. The Argentinean political crisis created an opportunity for U.S. to fill the market void, but that reduced U.S. ending stocks to an historic low 15 day supply providing no cushion for a poor production year.

It is much easier to project short term demand for grains and oilseeds than it is to project production, since most of the variation in crop production is weather-related. People must eat every day and changes in consumption tend to occur slowly over time. Clear trends are in place

for increased human food consumption that, so far, have not changed much because of higher prices and will not change in the short term unless impacted by a global economic downturn. Livestock also must be fed everyday. Livestock producers do make adjustments based on market price signals; quickly for poultry and dairy, but slowly for livestock with long production cycles such as beef and pork. Livestock producers are adjusting to high priced feedstuffs by partial liquidation of the national beef and pork breeding herds. The resulting short term increased supplies of beef and pork have kept meat case prices stable, but in the next few months consumers are likely to pay higher retail prices for beef and pork products.

It is unclear how changes in the global climate are affecting agricultural commodity production in the short term, although increased weather variability may be related to global warming. Short periods of intense rainfall can be as damaging to crop yields as long term drought. Hot temperatures can affect yields, but so can abnormally cold temperatures. A contra-cycle; possibly short term, due to a sunspot minimum is cited as the reason for the unusually cold winter, wet spring, and mild summer that have impacted crop production this year. One forecasting service is looking at the possible development of an El Nino that could bring cooler than normal temperatures to the Upper Midwest and increase the prospects of an early frost. Given the current tight global supply/demand situations for corn and soybeans, even minor deviations in weather could cause extreme price fluctuations.

A major concern for U.S. producers is the increased level of risk they face because of higher prices for fuel, fertilizer, and petroleum-based agricultural chemicals. For example, some fertilizer dealers are requiring farmers to prepay before an order for future delivery can be placed. This shifts inventory financing and risk from the fertilizer dealer to the farmer. Farmers must purchase the high priced inputs before or when they plant crops. They are then exposed to production and price risk until the crop can be harvested and sold. If production falls short or if selling price drops, farmers may not be able to generate enough revenue to pay the input costs causing them financial losses that could put their survival in jeopardy. Futures market contracts that would allow farmers to fully hedge this risk do not exist. Farmers can purchase crop revenue insurance that will reduce but not eliminate full exposure to the risk.

Although some market analysts suggest the world price of oil could fall to the \$70 range, futures contracts for the next few years are priced at well over \$100 per barrel. Even as some oil market analysts were predicting that oil might rise \$150 per barrel or more; oil price fell quickly to below

\$120 per barrel. For now, it is best to assume oil price will fluctuate at historically high price levels in the short term as the market responds to the degree of political stability in oil producing nations. In spite of the historically high prices of oil and gasoline, only the most efficient ethanol producers were able to eke out profits producing ethanol by converting \$6.00 to \$7.00 per bushel corn. Anecdotal evidence suggested that \$7 per bushel corn caused old, small-scale ethanol plants to shut down, large-scale plants to reduce corn grind, and new plant openings to be delayed because of low or negative margins. It sounded as if election-year political pressure might cause Congress to alter the import tariff, blenders' tax credit, and the mandate for ethanol inclusion in gasoline. But such talk subsided when grain prices fell in late summer. Ethanol makes up about five percent of the gasoline sold in the U.S. If ethanol were to be eliminated from the gasoline supply, the pump price of gasoline, because of the relative price inelasticity, would increase by an estimated 10 to 12 percent.

The high temperature, high pressure process to make gasoline requires about 17 percent more energy than is generated when used for motive fuel. Ethanol is two times more energy efficient than gasoline; bio-diesel four times more efficient than petrol-diesel. Even though bio-diesel is the most energy efficient of the liquid fuels group, the industry has been stifled by the high prices of vegetable and tropical feedstock oils; which have been bid away for human consumption. The current high price of petrol-diesel is allowing bio-diesel producers to make a minuscule profit with soyoil price in the 50 to 60 cent per pound range, but only when the one dollar per gallon federal subsidy is included in the profit calculation.

The point of the previous discussion is prices of agricultural commodities are now linked with the prices of oil, gasoline, and diesel fuel. Corn and soybeans have become inflationary, energy-related commodities in the minds of speculative fund investors. At times, it seems as if corn and soybean price movements are less influenced by their own supply and demand fundamentals than by developments in the energy markets. Speculators and speculative funds have been accused of distorting, perhaps even manipulating, commodity markets and prices. But there is no hard evidence that they have done anything other than perform the traditional role of assuming the risk of price fluctuations as they provide the means for short term price discovery in the commodity markets.