



Issue Report



What's Driving Food Prices?

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The three authors are agricultural economists on the faculty at Purdue University. Abbott works in international trade and macro factors. Hurt works in analysis of commodity markets. Tyner is an energy and policy economist most recently specializing in biofuels policies. Tyner also coordinated the project. The final product reflects the insights gained through working in a multi-specialist team.

This paper was prepared by the authors for Farm Foundation. The authors are solely responsible for its content.

The full report is posted on the Farm Foundation Web site, www.farmfoundation.org.

Preface

In the spring and early summer of 2008, the temperature of the rhetoric in the food-versus-fuel debate was skyrocketing right along with the prices of corn, soybeans and crude oil. Farm Foundation is not about heat or fueling fires. Our mission is to be a catalyst for sound public policy by providing objective information to foster deeper understanding of the complex issues before the food system today. We commissioned Purdue University economists Wallace Tyner, Philip Abbott and Christopher Hurt to provide a comprehensive, objective assessment of the forces driving food prices. Released in July 2008, *What's Driving Food Prices?* identified three major drivers of prices—depreciation of the U.S. dollar, changes in production and consumption, and growth in biofuels production. The three economists also reviewed more than two dozen reports and studies in the academic and popular press about commodity prices, biofuels and food prices, summarizing them in light of their own examination of the facts.

Today, just eight months later, the landscape is remarkably different. The 2008/2009 crop production was higher than forecast, quieting talk of inadequate supplies. Significant declines have occurred in crude oil, grain and oilseed crop prices. Biofuel production has slowed. The value of the U.S. dollar has appreciated. A global financial crisis and recession now dominate the news.

Given this remarkable reversal of conditions, we asked Tyner, Abbott and Hurt to re-examine the drivers of food prices. Their analysis indicates that now, as eight months ago, the answers are not simple. While the level of food prices has dropped, the forces driving those prices remain the same today as in July 2008, as does the need to understand how those forces work and interact.

As did the July 2009 report, this update reinforces the fact that food prices are influenced by diverse and multiple factors generated by complex global economic issues. It is the intent of Farm Foundation that the objective information provided in this report will help public and private leaders better understanding the functions of these driving forces as they make business and public policy decisions for the future.

Neilson Conklin
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Executive Summary

In 2008, Farm Foundation commissioned three Purdue University economists to write the report, *What's Driving Food Prices?* Released in July 2008, the report had two purposes: to review recent studies on the world food crisis, and to identify the primary drivers of food prices. The economists, Phil Abbott, Chris Hurt and Wally Tyner, identified three major drivers of food prices: world agricultural commodity consumption growth exceeding production growth leading to very low commodity inventories; the low value of the U.S. dollar; and the new linkage of energy and agricultural markets. Each was a primary contributor to tightening world grain and oilseeds stocks.

Between spring 2008 and February 2009, each of these driving forces reversed direction. A world financial crisis put the brakes on world income growth. Global crop production returned to more favorable levels for both the 2007/08 and the 2008/09 crops, as both production area and yields increased. After July 2008, the exchange rate of the U.S. dollar appreciated by as much as 22% against major currencies. Energy prices collapsed, influenced by changes in income and exchange rates. Lower energy prices constrained the economics of ethanol, contributing to weaker commodity prices.

While these transitions are remarkable—almost a 180-degree course change—the key drivers of food prices remain the same: supply and utilization; the exchange rate of the dollar and related world macroeconomic factors; and the energy/agriculture linkage. At the request of Farm Foundation, Abbott, Hurt and Tyner updated their analysis. That analysis verified the role of the key drivers, even as conditions changed. While the futures holds many question, understanding the function of these driving forces is a critical first step in managing the potential impacts.

Supply and Utilization

Between 1998 and 2005 global grain stocks were high and prices low. Production dropped, shortfalls were made up from stored reserves, and by 2006 grain and oilseed stocks had been reduced substantially. The combination of three events—low world crop production in 2006 and 2007, growing demand for food, and strong markets for biofuels—drove global stocks to extremely low levels and sent commodity prices skyrocketing. Commodities hit record prices in 2008—wheat in February, rice in April, corn in June and soybeans in July.

High prices reduced global usage/demand both for food and fuel. Higher market prices also spurred increased crop production, with more land in production and more inputs used in production. The much-anticipated production shortfalls did not materialize. By January 2009, USDA's actual and expected stocks for most grains and oilseeds were rebuilding, and crisis shortages were avoided.

Grain and oilseed prices have dropped sharply from record-setting peaks, but still remain well above long-term norms. While there could still be additional downward pressure in the short-run, prices are not likely to return to the low levels of 1998 to 2005.

Grain and oilseed prices have moved downward more rapidly than production costs. This means tight margins for the world's grain and oilseed producers through the 2009/2010 crop year. Some marginal impacts on production may occur.

Exchange Rates and Macroeconomic Factors

The changes in the dollar, agricultural commodity prices and crude oil followed similar relationships both to the June/July 2008 peak and afterwards. The weakening dollar through July 2008 meant higher dollar prices, stronger exports and weaker imports. But since July 2008, the dollar has appreciated against the Euro and against many other currencies—especially those of developing countries—leading to weaker exports and more imports. Appreciation of the dollar also contributed to rapid declines in the dollar prices of agricultural commodities.

Macroeconomic forces, such as global recession and financial crisis, are critical to explaining the recent changes in the value of the dollar, crude oil prices, and agricultural commodity prices, although market specific factors also matter in each case. Individual commodity prices, driven by supply utilization events in their respective markets, ride on top of macroeconomic variables. Responses to macroeconomic shocks are rapid, while supply-utilization adjustments can be slower, especially if there are surplus stocks.

Today, agricultural commodity prices—and input costs—remain high relative to historic norms, especially when expressed in the currencies of U.S. trading partners. Future agricultural commodity price changes will depend greatly on exchange rates and crude oil prices, which in turn are linked and depend on macroeconomic performance. These drivers are highly volatile and difficult to predict.

Energy/Agricultural Price Link

Historically, energy and agricultural markets were largely independent, each influenced by their respective supply and demand situations. That is no longer the case. Since 2006, energy and agricultural markets became closely linked as biofuels production surged. Ethanol and biodiesel were linked as energy substitutes for gasoline and diesel, and usage of crops for these biofuels became large enough to influence world prices.

The last half of 2008 was a turbulent period for both energy and agricultural commodities. Crude oil prices fell rapidly,

but gasoline prices fell faster and further. Low gasoline and crude oil prices reduced the expected use of corn for ethanol which, in turn, put pressure on ethanol prices and corn prices. Ethanol prices held fairly steady as gasoline prices plunged, thus ethanol prices became considerably higher than gasoline.

In the first half of 2008, ethanol production continued to expand. By the end of the year, industry economic fortunes had deteriorated such that up to two billion gallons of capacity was idled. The biofuel Renewable Fuels Standard (RFS) became binding for the first time in December 2008. Because of ethanol plant closings, all of the contracted supply was not available, and blenders had to scramble to find available supply to meet the 2008 RFS mandates. This probably explains the strengthening ethanol price relative to gasoline and crude oil in late 2008.

Ethanol/corn price ratios stayed in a narrow range as the relative prices determined ethanol plant profitability and production decisions. So the ethanol/corn price link is still very strong. While there have been changes in the way markets are now functioning compared to earlier periods, the basic relationship between crude oil and corn remains strong.

The Future: Big Questions

Farm Foundation's July 2008 *What's Driving Food Prices?* report, as well as this update, confirm the linkages of three key drivers influencing food prices. Whether the future takes prices up or down depends on many unknowns—not the least of which are the depth and recovery characteristics of the current global financial crisis and recession.

Macroeconomic forces have and will continue to have a critical role in agricultural commodity prices. The depth and length of the current recession will influence how long both food and crude oil prices stay at lower levels. The extent of the recession and the pace of recovery, as measured by GDP growth in the United States and abroad, will influence any subsequent rise in commodity prices.

The extent to which inflation accompanies that recovery will strongly influence commodity prices. U.S. dollar exchange rates will reflect U.S. economic performance—defined by growth, interest and inflation rates—relative to Europe, Asia and developing countries. Crude oil and

other commodity prices are linked with what happens to the exchange rate. The big questions: When will recovery occur? Will inflation accompany recovery? Will the forces re-emerge that led to the very weak dollar during the first half of 2008?

One critical factor that will both influence exchange rate changes and be influenced by them is the price of crude oil. The basic mechanisms by which energy prices have driven food prices will continue. Recent declines in crude oil prices have not been fully matched by reductions in ethanol or corn prices. The demand for corn and ethanol in periods of low oil prices could be determined by the Renewable Fuels Standard (RFS) minimum requirements. Limits to ethanol production, either due to capacity constraints or the blending wall, would limit demand for corn and diminish the effect of higher energy prices on food. In each case, public policies matter. The big questions: Will higher crude oil prices return? Will binding constraints influence the pass-through of energy prices to corn prices? How will public policy evolve in the face of these market changes?

Market-specific supply and utilization events will continue to drive prices for individual commodities around these macroeconomic and energy market trends. Currently, agricultural commodity prices are lower than the peaks realized in the summer of 2008, but are high by historic standards. Persistent, large demand for corn and oilseeds to produce biofuels led many to predict that this period of high food prices would last longer than earlier episodes. As global economies recover, the potential exists for increased demands for feed. Given the lags in adjustments of input costs, the big supply/use questions are: When will supply responses catch up to increasing demands? Will declining real agricultural prices return? Will these new circumstances lead to higher agricultural commodity prices in the future? How will agricultural and energy policies influence future commodity prices?

This report and the July 2008 report reinforce the fact that food prices are influenced by diverse and multiple factors generated by complex global economic issues. Predicting outcomes is not possible, but understanding the function of these driving forces is a critical first step in managing the potential impacts.



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