

Ethanol

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The Ethanol, Corn Relationship: A Silver Lining

The ethanol industry was hit hard in 2008 with a steep rise in corn prices. However, the episode should provide a risk management advantage in 2009.

By Hunt Stookey

It's been a wild, unexpected ride for ethanol producers over the past two years. While the ethanol business may be less profitable now than it was in 2006, it is also a lot less risky.

The reason: the price of corn has been pegged to the price of ethanol, eliminating a big source of commodity risk in the business.

In the period up until approximately the end of

2006, corn and ethanol prices moved independently, requiring active risk management based on a producer's expectation of future price moves for the two commodities. However, the rules changed

mid-game when a fundamental shift in the dynamics of the corn market linked the price of corn to the price of ethanol. Sometime around the beginning of 2007, corn and ethanol stopped moving

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independently and became highly correlated.

Consequently, risk managers no longer have to worry about the price of corn going up while the price of ethanol goes down. Their primary goal should be simply to match corn purchases with ethanol sales.

The Price of Corn Pegged to Ethanol

How did corn become so highly correlated with ethanol? How did crush spreads fall from a peak of more than \$3 per gallon during the methyl tertiary butyl ether phase-out in 2006 to a range of 20 to 40 cents in the summer of 2008?

Starting around the begin-

price of ethanol. In June 2008, corn was \$7.50 per bushel and ethanol \$3 per gallon. By the middle of October corn was \$3.73 per bushel and ethanol was \$1.65 per gallon. At the same time, corn and ethanol became highly correlated.

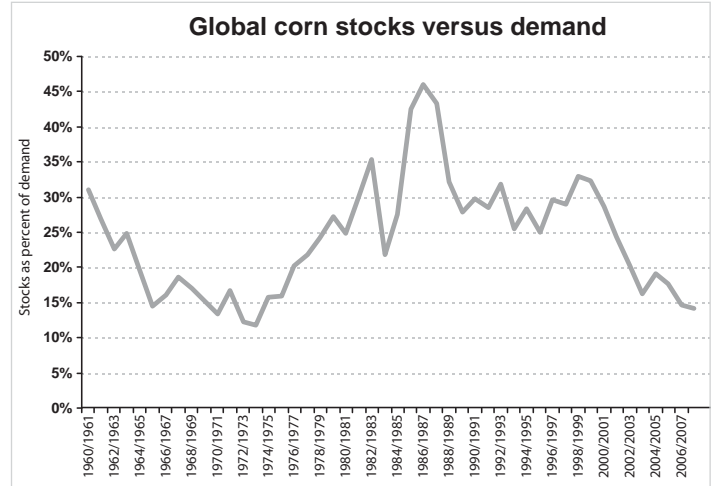
There is a fundamental economic explanation for this relationship: the ethanol industry is the marginal consumer in a short corn market.

Historically, global stocks functioned as a shock absorber for year-to-year fluctuations in production. However, sustained global demand growth has depleted those stocks, and in 2006 the surplus in the global corn market was fully absorbed. World stocks were drawn down to

This pricing dynamic is unfamiliar to the agricultural commodities markets, but well documented in other industries.

ning of 2007, crush margins for ethanol producers compressed rapidly, and the price of corn started to track the

less than 15 percent of annual consumption—a historically low level not seen since the early 1970s.



Sustained strong demand over the past two decades has run global stocks to minimum levels, eliminating the buffer and requiring demand rationing to offset production shortfalls.

SOURCE: USDA, HIGHQUEST PARTNERS ANALYSIS

When there is a limited supply of corn, demand has to adjust to match that supply: the balance sheet has to balance. In the short term, demand for corn for food and livestock feed (domestic and export) is highly inelastic. If the price of corn rises, there is nothing a hog producer can do but pay the higher price or permanently exit the business. By comparison, an ethanol producer can easily idle his or her facility. So if there is not enough corn to satisfy all of the potential demand in

the market, the ethanol industry has to idle some capacity to ration demand.

In a market economy, the price of corn (the price everyone pays) gets bid up until enough ethanol capacity is idled to clear the market (i.e., to balance the balance sheet). If the price of ethanol rises (or falls), the price of corn will likewise rise (or fall) to maintain the supply. At the end of the day, a bushel of corn is worth 2.8 gallons of ethanol (less the net conversion costs for the break-even

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producer), whatever the price of ethanol may be.

This pricing dynamic is unfamiliar to the agricultural commodities markets, but well documented in other industries. In wholesale electric power, for example, the price of peak hour electricity is driven by the price of natural gas because it is nearly always a gas-fired generating unit operating on the margin. In commodity chemicals, it is widely understood that the market price will reflect the conversion economics of the high-cost producer, assuming the industry is operating at less than full capacity.

Moreover, as long as the ethanol industry is the marginal consumer, then the price of corn will be pegged to the price of ethanol. If there is a crop event and the supply of corn drops by 20 percent, then the price of corn would rise slightly relative to ethanol, narrowing spreads in order to push some, but not all, remaining capacity out of the market.

Conversely, when corn production increases over

time so that there are again surpluses, the ethanol industry will enjoy brief periods of extraordinary profitability. However, someone will eventually add capacity to soak up the surplus, putting ethanol back on the margin.

Implications for Risk Management

With the price of corn pegged to the price of ethanol, crush spreads will stay within a fairly narrow range dictated by the conversion economics of ethanol production, fluctuating with the price of natural gas and as marginal producers idle or restart capacity in response to changes in the corn supply. This relationship nearly eliminates commodity risk from the industry. Ethanol producers no longer have to worry about hedging a market scenario with widening corn spreads and narrowing ethanol spreads because it won't happen. Rather, a hedging strategy for corn that does not match ethanol sales contracts/hedges will represent a speculative bet on the direc-

tion of both ethanol and corn prices. As such, it will introduce risk to the business.

Most producers did not recognize the change in the fundamentals of the business and continued to hedge corn with disastrous consequences throughout much of 2008. Some of the largest and presumably most sophisticated players in the industry reportedly bought corn in June, right before the collapse, and were caught with \$7 per bushel corn in a \$2 per gallon ethanol market.

While tragic, this should not be surprising. The rules changed mid-game and the change went largely unnoticed. Certainly, risk managers saw that the prices of corn and ethanol had suddenly become highly correlated, but for the most part they treated that anomaly as a temporary coincidence or perhaps as a result of open interest from commodity index funds. Because they did not recognize that the rules had changed, they continued to hedge corn and ethanol as independent commodities when in fact

corn had become almost entirely dependent on ethanol.

Summary

Somewhere around the beginning of 2007, the fundamentals of the corn market changed. As the global surplus supply was absorbed, ethanol became the marginal consumer in a short corn market, and the value of a bushel of corn became pegged to the price of the 2.8 gallons of ethanol that could be produced from it—whatever the price of ethanol. While this has compressed margins from their earlier levels, it has also largely eliminated the commodity risk in the ethanol business. **EP**

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