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NEVIL C. SPEER, PH.D, MBA (nevil.speer@wku.edu)
WESTERN KENTUCKY UNIVERSITY

Obvious to all readers, the ethanol industry is predicated on changing one source of energy (corn) to another (ethanol). Basic that may be, it's fundamental to characterizing the industry. The process equates ethanol plants to margin operators which must function within constraints dictated by the difference between input costs (corn) and its primary source of revenue (ethanol). Calculation of gross profit is relatively simple and typically denoted by the example below utilizing 2008 average values.

<u>Revenue (\$/bu)</u>	
2.8 gal ethanol / bu corn @ \$2.16 / gal	\$6.05
17.5 lb DDG / bu corn @ \$150.00 / T	1.42
Gross Revenue	\$7.47
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<u>Operating Costs and Expenses (\$/bu)</u>	
Cost of goods sold: corn @ \$4.80 / bu	\$4.97
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<u>GROSS PROFIT (\$/bu)</u>	<u>\$2.50</u>

That leaves the industry, in aggregate, with approximately \$2.50 per bushel to cover fixed costs, variable production costs, return to management, return to investment and profit. Within context to this discussion, though, the average return is not what's really important but rather the influence of energy prices upon the grain markets.

Rabobank's comprehensive report released in July, *The Boom Beyond Commodities: A New Era Shaping Global Food and Agribusiness 2008*, highlighted shifting sands within agriculture. Namely, biofuel initiatives have added a new dimension to agriculture's underlying demand structure: food, feed, fiber, and now fuel. Ethanol production has steadily climbed higher and now represents 38% of the nation's domestic corn use. Comparatively, the livestock sector now represents approximately 50% of the nation's corn utilization (versus 75% prior to the ethanol era). Increased competition for corn inputs possesses some critical and obvious ramifications.

Adding biofuels to the equation has forced markets to work to new levels in their effort to establish equilibrium between supply and demand: "...we [Rabobank] believe the current "f" factors of demand will remain strong over the coming years and support a base shift in commodity prices..." In other words, the corn market no longer operates within a relative demand equation dictated by food and feed only – energy prices now influence the market.

That's a new paradigm; corn is now being largely priced as another form of energy – the primary driver in the market is relative value in terms of gross profit potential as outlined above. The first graph below highlights the price trends for corn, ethanol, gasoline and oil during the past several years. Clearly, the items move in conjunction with one another. But that doesn't answer several key questions: First, how much influence do energy prices have on corn prices? And second, what's the cause and effect between energy prices and the corn market?

The second graph answers those questions; it highlights the relationships among corn (the dependent variable) and the other three sources of energy (independent variables). Statistically speaking, variation in ethanol prices explains approximately 56% of the variation in corn prices, gasoline approximately 66% while differences in oil explains almost 75% of the variation in corn prices. Oil is the largest market and least influenced by local factors; therefore, it possesses the least amount of "noise" - local factors which influence ethanol and gasoline prices on a weekly basis. Therefore, oil serves as the best predictor of corn prices. Bottom-line: the corn market overwhelming has a new influence – energy! Or as the World Bank (*Global Economic*

Prospects: Commodities at the Crossroads, 2009) explains it: “Since the oil market is much larger than the market for maize (if all the maize currently produced in the world were converted into ethanol, it would equal only 8 percent of global gasoline supplies), the price of maize is now effectively determined by the price of oil.”

Some of that influence has been diminished in recent months as energy prices have bottomed out. As oil prices decline, especially under the \$50/bbl threshold, ethanol production becomes a tenuous endeavor. In the interim some have argued that decoupling among the markets will occur. However, Rabobank emphasizes that biofuel production will continue to move ahead in the U.S., Brazil and the E.U.. And “...at the current pace, biofuels will be responsible for a significant share of added demand for these commodities in the coming years though food will remain by far the primary consumer.” That said, over the long-run, it’s apparent there’s a whole new dimension to decision-making and risk management especially for those commodities that have a direct link to the energy markets; not to mention if we begin to crunch carryover on top of energy volatility (that’s another discussion for another day).

The commodity price surge over the past several years stems from a variety of factors. Clearly higher prices have impacted agriculture in a number of ways – most notably, for many producers it’s altered underlying capital requirements to maintain normal business operations. But perhaps more important is the added volatility that’s been encountered along the way. And if 2008 has taught us anything (financial crisis or not) is that the trading puzzle has become increasingly complex. All markets are inexorably linked and increasingly dynamic. Neither simple nor safe havens no longer exist. Therefore, there’ll be no reprieve from needing to be hyper-vigilant in terms of decision making, marketing and/or risk management in the future.





