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Cornhusker Economics

Agricultural Economics Department

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2-13-2008

## The Corn Ethanol Boom and Food Prices

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Perrin, Richard K. and Beckman, Luke, "The Corn Ethanol Boom and Food Prices" (2008). *Cornhusker Economics*. 354.

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# CORNHUSKER ECONOMICS

## The Corn Ethanol Boom and Food Prices

From January, 2006 to December, 2007 the Consumer Price Index (CPI) went up 6.5 percent. During this same period, ethanol production increased 75 percent, which helped grain prices to rise dramatically – corn price doubled, wheat went up even more, and soybeans a little less. Casual reading of the public press would suggest that there must be some connections here.

No doubt the ethanol boom has been a big contributor to the increase in prices of corn and other grains. But prices for these crops are determined in the world market, and other supply-demand factors throughout the world have affected them. Furthermore, the recent market disruptions have led to much uncertainty and speculation about how demand and supply factors will play out to determine future crop prices. Thus, no one is sure that current prices are those that will eventually balance supply with demand over the next crop year.

Lacking more perfect information about the effect of ethanol on grain prices, we can learn from econometric models what might be the plausible effects of ethanol versus other market factors. Economists at Iowa State have addressed this question using the CARD-FAPRI model of world agricultural markets<sup>1</sup>. They estimate that a doubling of United States corn ethanol production from 2007 levels would eventually increase world corn prices by 40 percent, soybean prices by 20 percent and wheat prices by 18 percent. Changes of this magnitude are consistent with

<sup>1</sup> Searchinger, et al. "Use of U.S. Croplands for Biofuels Increases Greenhouse Gases Through Emissions from Land Use Change." *Science*, 7 February 2008 (10.1126/science.1151861).

Market Report	Yr Ago	4 Wks Ago	2/8/08
<b><u>Livestock and Products,</u></b>			
<b><u>Weekly Average</u></b>			
Nebraska Slaughter Steers, 35-65% Choice, Live Weight. . . . .	\$89.69	\$89.07	\$90.63
Nebraska Feeder Steers, Med. & Large Frame, 550-600 lb. . . . .	117.90	116.22	125.62
Nebraska Feeder Steers, Med. & Large Frame 750-800 lb. . . . .	99.26	*	*
Choice Boxed Beef, 600-750 lb. Carcass. . . . .	143.34	149.24	148.57
Western Corn Belt Base Hog Price Carcass, Negotiated. . . . .	64.33	47.09	56.04
Feeder Pigs, National Direct 50 lbs, FOB. . . . .	68.27	47.23	47.13
Pork Carcass Cutout, 185 lb. Carcass, 51-52% Lean. . . . .	63.37	56.19	61.03
Slaughter Lambs, Ch. & Pr., Heavy, Wooled, South Dakota, Direct. . . . .	88.37	86.63	90.50
National Carcass Lamb Cutout, FOB. . . . .	240.14	262.65	254.89
<b><u>Crops,</u></b>			
<b><u>Daily Spot Prices</u></b>			
Wheat, No. 1, H.W. Imperial, bu. . . . .	4.36	8.54	10.14
Corn, No. 2, Yellow Omaha, bu. . . . .	3.84	4.69	4.75
Soybeans, No. 1, Yellow Omaha, bu. . . . .	6.98	11.94	12.27
Grain Sorghum, No. 2, Yellow Dorchester, cwt. . . . .	6.23	8.43	8.55
Oats, No. 2, Heavy Minneapolis, MN, bu. . . . .	2.64	3.35	3.40
<b><u>Hay</u></b>			
Alfalfa, Large Square Bales, Good to Premium, RFV 160-185 Northeast Nebraska, ton. . . . .	135.00	135.00	135.00
Alfalfa, Large Rounds, Good Platte Valley, ton. . . . .	92.50	85.00	85.00
Grass Hay, Large Rounds, Good Northeast Nebraska, ton. . . . .	90.00	*	*

\* No market.



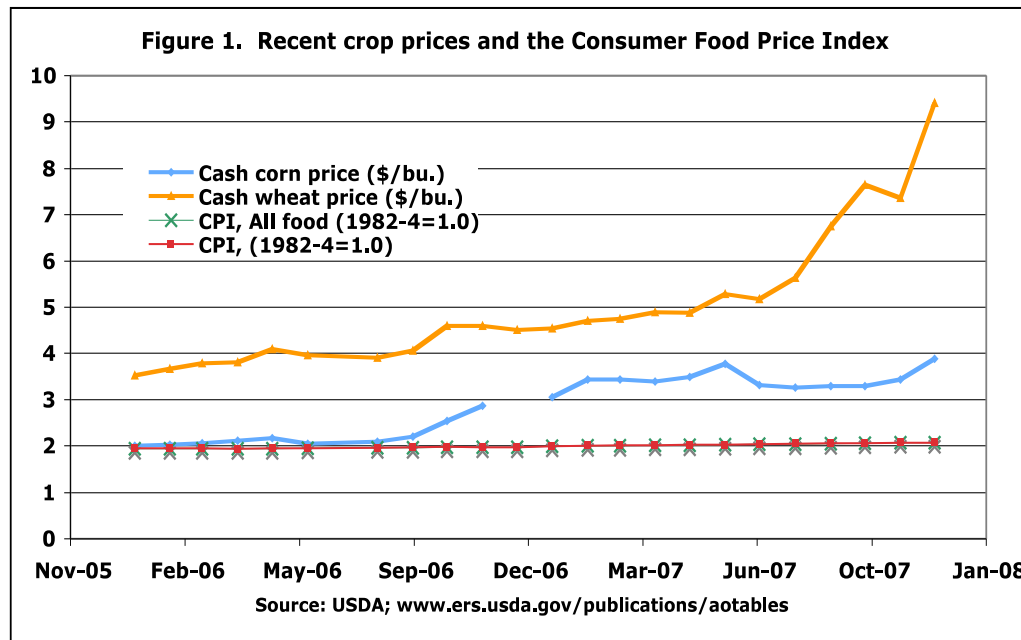
estimates of ethanol's recent impact, and they clearly suggest that recent grain price increases are higher than could be expected from recent ethanol increases alone.

Suppose it's true that corn prices have increased 40 percent as a result of ethanol – what effect has that had on food prices? Figure 1 charts the last two years' corn prices, along with the CPI and the "all food" component of the CPI. One can see that despite the

those commodities at the farm gate was only \$0.20 (the remaining \$0.80 is for processing, packaging, transportation, etc.) Therefore, as a fraction of the consumer's food expenditure dollar, the cost of the corn used to produce that food is about 3.2 percent (16 percent of the 20 percent).

This simple breakdown of values tells us that rising corn prices will not contribute much to higher food prices – a 40 percent increase in corn price will ultimately be passed on as a 40 percent increase in just 3.2 percent of the cost of food – a final food cost increase of about 1.3 percent.

If the ethanol-corn boom had also increased soybean and wheat prices by 40 percent as well, calculations similar to those above indicate that food cost would rise by two percent. If ethanol really increased grain prices 80 percent instead of 40 percent, it would be responsible for a four percent increase in food price.



dramatic rise in corn prices (94%) and wheat prices (167%), the CPI and its food component (super-imposed on one another at the bottom line of the graph) have increased only slightly – 6.5 percent total over the two years. Clearly, if ethanol-induced grain prices are driving food price increases, we haven't seen it yet.

But we shouldn't expect to see that relationship yet. Farm price increases are indeed ultimately passed on to consumers, but this adjustment process occurs with a lengthy and irregular lag. It hasn't happened yet, but it will. We have made some calculations below to help understand what this impact might be.

A closer look at recent corn statistics will show that value of the corn used in production of U.S. food is small. The farm-gate value of corn destined for domestic use in the U.S. over the past two years averaged about \$35 billion. This represents about 16 percent of the farm gate value of all farm production consumed domestically (about \$216 billion). In turn, of each \$1 that consumers spend on food, the value of

These estimates are less than the five percent estimated by the CARD-FAPRI econometric model. We think we can confidently conclude that the ethanol boom through 2007 will ultimately increase U.S. food prices by less than five percent, while another doubling of ethanol capacity would bring that impact to something less than ten percent.

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