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Do Biofuels Mean Inexpensive Food Is a Thing of the Past?

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Concern is growing that expanded biofuels production means the end of inexpensive food. After all, the prices of corn, soybeans, and wheat have dramatically increased and are likely to stay high. The line of thinking that expects expensive grains and oilseeds to lead to dramatically higher food costs follows the logic often used by proponents of U.S. farm programs. Many proponents justify subsidies by claiming that farm payments work to keep food plentiful and inexpensive by artificially keeping the price of commodities lower than production costs. For this justification to be valid, farm subsidies would have to expand commodity production, thereby lowering commodity market prices. Lower prices would then, in turn, lead to an expansion in the production of the food that all of us actually eat (pork chops instead of no. 2 yellow corn), which would cause food prices to be lower than they would be otherwise. Thus, according to the argument, we do not need to spend as much of our income on food. By the same logic, high commodity prices caused by subsidized biofuels should result in a reduction in the production of food and higher food prices.

There is enough economics behind this logic to make it plausible, even though it is largely false. In the case of farm programs, it is easy to demonstrate that the small share of the final consumer food dollar that goes to the farmer means that even a doubling of feed grain and oilseed prices from expanded biofuels production will lead to relatively modest increases in the prices of meat and dairy products. Food prices are largely determined by costs and profits after commodities leave the farm.

How Much for Food?
In the United States, consumers spend a relatively small amount of their disposable incomes on food. However, diverting a large share of U.S. feed grain production to biofuels will affect the price of food. Knowing how U.S. consumers spend their food dollars and how higher commodity prices influence food prices will give us a better understanding of whether we’ll be spending more or less on food in the future.

One indicator of a nation’s standard of living is the proportion of income that its citizens spend on food. Typically, this share is measured using after-tax or disposable income. As shown in Figure 1, this share in the United States has fallen from 20 percent in the early 1950s to about 10 percent today. In contrast, Canadians today spend an average of about 14 percent of their disposable income on food, and Mexicans spend 26 percent.

The share of income that Americans spend on food would actually be smaller than 10 percent were it not for the large increase in expenditures away from home. As shown in Figure 2, beginning in the mid-1960s, Americans began to increase the amount of money spent on dining out. Today Americans spend about half of their food dollar on food away from home. Part of this increase in expenditure patterns has been driven by the changing structure of the U.S. family, including more women entering the labor force, and part has been driven by changes in demand for food driven by income growth. USDA reports that expenditures on food total about $3,600 per person per year in 2006 dollars.

The primary reason why food prices have risen more slowly than incomes and other prices is rapid productivity growth on the farm and all along the food chain. Farmers and...
In July of 1958, our center was founded as the Center for Agricultural Adjustment, under director Earl O. Heady, and began operation. This fall, the Center for Agricultural and Rural Development will kick off an academic year that not only celebrates our 50-year history but also, in keeping with our founding mission to help improve the condition of the Iowa agricultural economy, sets a course for CARD’s commitment to addressing the wide range of challenges in agriculture—in trade, food, renewable fuels, and resource policy—today and for decades to come.

CARD’s Founding Years

1956
15 prominent Iowans petition Iowa State President James Hilton and Dean of Agriculture Floyd Andre for assistance from the college in addressing the welfare of Iowa agriculture.

1957
57th Iowa Assembly passes resolution and appropriation of $100,000 to support research program on agricultural adjustment.

Iowa Board of Regents creates Center for Agricultural Adjustment in the Division of Agriculture at Iowa State College. Earl Heady is named executive director.

food companies have dramatically increased the efficiency with which they can produce food. There is no reason to believe that we have seen an end to this productivity growth. But expanded biofuels production may counter some of the impacts of this growth on future food prices.

Figuring Feed Costs into Food Expenditures

Increased ethanol production has driven the price of corn, other feed grains, and oilseeds much higher. Because corn and soybean meal prices largely determine the price of feeding hogs, poultry, and cattle, increased feed costs will eventually result in higher market prices for pork, beef, chicken, and dairy products. Corn is also used widely as an ingredient in many processed foods. Thus, higher corn prices will also affect the cost of soft drinks, snack foods, baked goods, and many other food items.

In general, the percentage by which the price of a particular food item increases because of higher corn prices depends on the value of corn embodied in the product relative to the price of the product. For example, if a $1.00 can of soda contains 2¢ worth of corn that is contained in high-fructose corn sweetener, then a doubling in the price of corn would increase the cost of producing the soda by at most 2¢. If all this increased cost were passed along to the consumer, then the doubling of corn prices would increase the price of soda by about 2 percent.

Corn makes up a relatively large share of the product prices of eggs, pork, and poultry. Beef and dairy products also contain significant amounts of corn, but the prices of processed foods are largely determined by the cost of other components. Thus, one would expect that the prices of eggs, pork, and poultry would go up by a larger percentage than the prices of beef and dairy products, which would go up by a larger percentage than processed foods.

In Figure 2, the real food expenditures (1988 dollars) show how increased feed costs have impacted food expenditures. The graph illustrates how the cost of food at home and away from home has increased over time, reflecting the effects of higher feed costs.

Source: USDA/ERS, Food Expenditure Tables.

Figure 2. Real food expenditures (1988 dollars)
Other things being equal, corn makes up a smaller share of the final price of food consumed away from home than it does for food consumed at home because the consumer must pay for additional costs incurred in preparing food away from home. This lower share acts to decrease the final impact of corn price increases on total food expenditures because half of average food expenditures are made away from home.

In a recent study, CARD researchers estimated that a 30 percent increase in the price of corn, and associated increases in the prices of wheat and soybeans, would increase egg prices by 8.1 percent, poultry prices by 5.1 percent, pork prices by 4.5 percent, beef prices by 4.1 percent, and milk prices by 2.7 percent. For all food consumed at home, average prices would increase by 1.3 percent. For food consumed away from home, average prices were estimated to increase by 0.9 percent. So, across all food consumed, 30 percent higher corn prices increase all average food prices by 1.1 percent, according to our estimates.

The CARD assessment of modest effects on food prices of increased corn prices seems to run counter to what is happening in the supermarket. Milk prices are at an all-time high, while meat and egg prices continue to remain at historically high levels. If high corn prices are not to blame, what is? The primary cause of high milk prices is that international demand for dairy products has outstripped international supply. The lack of supply is a result of drought in Australia, a drop in subsidized milk production in the European Union, and a lack of profits in the U.S. dairy industry in recent years. Strong world demand is a result of continued strong income growth in China, India, and other Asian countries, and continued strong U.S. demand for cheese. The excess world demand for dairy products has pulled U.S. products onto world markets, thereby raising U.S. prices. Instead of fighting foreign competition, U.S. milk producers are now benefiting from international markets.

A Bigger Impact for Some Consumers
With agriculture being asked to supply an increasing share of U.S. fuel, it follows that food prices will trend upward. For most Americans, though, the higher prices caused by ethanol will hardly be noticeable. However, low-income U.S. consumers spend a much greater proportion of their income on food than high-income consumers do. Their large share combined with less flexibility to adjust expenditures in other budget areas means that any increase in food prices will cause hardship.

Low-income consumers in other countries will be hurt even more by more expensive food. For example, the average Mexican consumer spends 12 percent of his or her food budget (about 3 percent of disposable income) directly on corn products, primarily tortillas. This means that any increase in the price of corn will affect the standard of living of many in Mexico.

And finally, food price increases, from whatever source, will directly affect the cost of U.S. nutrition programs. Higher commodity prices combined with shrinking inventories mean that the U.S. government will be forced to pay high market prices for food for school lunch programs. And the automatic food price escalators built into the food stamp program mean rising expenditures there. The silver lining, as far as the federal budget is concerned, is that at least a portion of the higher costs of nutrition programs will be offset by lower support payments for farmers because of high commodity prices.