

Ethanolomics Unleashed

The diversion of U.S. corn from food to biofuel production is shaking the poultry industry. What's ahead? BY JIM BUDZYNSKI

Rarely in the course of an industry has a sea change as large occurred as the “food or fuel” debate today sweeping across the agrifood industry. Until very recently, agriculture had a single focus – producing an abundant supply of healthy, high-quality food. A huge new market – the production of natural alternatives to high-cost fossil fuels generally located in politically unstable parts of the world – is creating the biggest shift in this industry since the dawn of the green revolution fifty years ago. For those aligned with the poultry industry, we all will wrestle with how this change impacts our businesses.

We define biofuels broadly as the production of alternatives to traditional energy sources such as gasoline, diesel fuel, coal and natural gas using natural, renewable carbon sources. The feedstock (carbon source) can range from traditional food and feed crops (such as corn and soybeans) to byproducts or biomass (wood chips and switchgrass). Ethanol is of course the first, and by far the largest,

biofuel under development and is having the greatest impact on the poultry industry.

Like any commodity business, ethanol is driven by economics. Ethanol economics are driven by three primary costs – the market cost (value) of ethanol in gasoline, the cost of converting corn to ethanol, and the raw material cost for feedstock, usually corn.

Unfortunately, estimating the future course of development for the ethanol industry requires one to simultaneously estimate the direction of all three of these costs.

Market Value Of Ethanol

The core economics of global oil dramatically impact the economics of biofuels. Over the long term, the economics of oil seem very favorable to the biofuels industry, but not without some bumps in the road. The oil crisis

rather than \$15 to \$40 per barrel, is the norm for oil prices. So while the long-term economic story is good for biofuels, we can expect some turbulence in the next few years.

One final factor to keep in mind here is that government subsidies to biofuels may make them more competitive than their production costs would dictate. Between now and the November 2008 elections we think that betting against higher biofuels subsidies will be a very risky proposition. Think of this as creating a

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in the 1970s was caused by a supply squeeze, and prices inevitably retreated when supplies expanded. In the ethanol space, very aggressive ethanol capacity expansions over the next few years will essentially double U.S. ethanol production from 4 billion to 8 billion gallons. We will be shocked if this tidal wave of new capacity at some point over the next two years doesn't result in some significant ethanol price erosion.

But the key driver of today's higher oil prices is both a demand and a supply squeeze. China and India are rapidly industrializing and their emerging middle classes are buying cars (and gas) at a breakneck pace. At the same time, the global oil industry has been challenged to replace depleted oil reserves through new discoveries. It seems very plausible that we are entering a new era where \$40 to \$70 per barrel,

floor under ethanol prices – high ethanol subsidies when oil prices are low and lower ethanol subsidies when oil prices are high. It seems highly unlikely that a drop in global oil prices will cause the ethanol industry to collapse as it did in the early 1980s.

Cost Of Conversion And Integration

Dry grind corn ethanol conversion costs will improve incrementally as we make better use of DDGS, use less water, and use less energy. Alternative feedstock conversion costs are likely to improve dramatically as better enzymes and core processes are developed. This differential is likely to dictate how quickly the shift away from corn takes place. Ethanol can be blended into gasoline at 10 percent or so with no change in infrastructure, so based on U.S.



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gas consumption about 12 billion to 15 billion gallons of ethanol can be absorbed into the system without major retrofitting. But achieving Mr. Bush's 35-billion-gallon ethanol usage target is going to require an awful lot of capital spending by the fuel industry. Proponents of the Brazilian cane ethanol system should remember that Brazil began retrofitting its delivery systems thirty years ago. We have a long way to go.

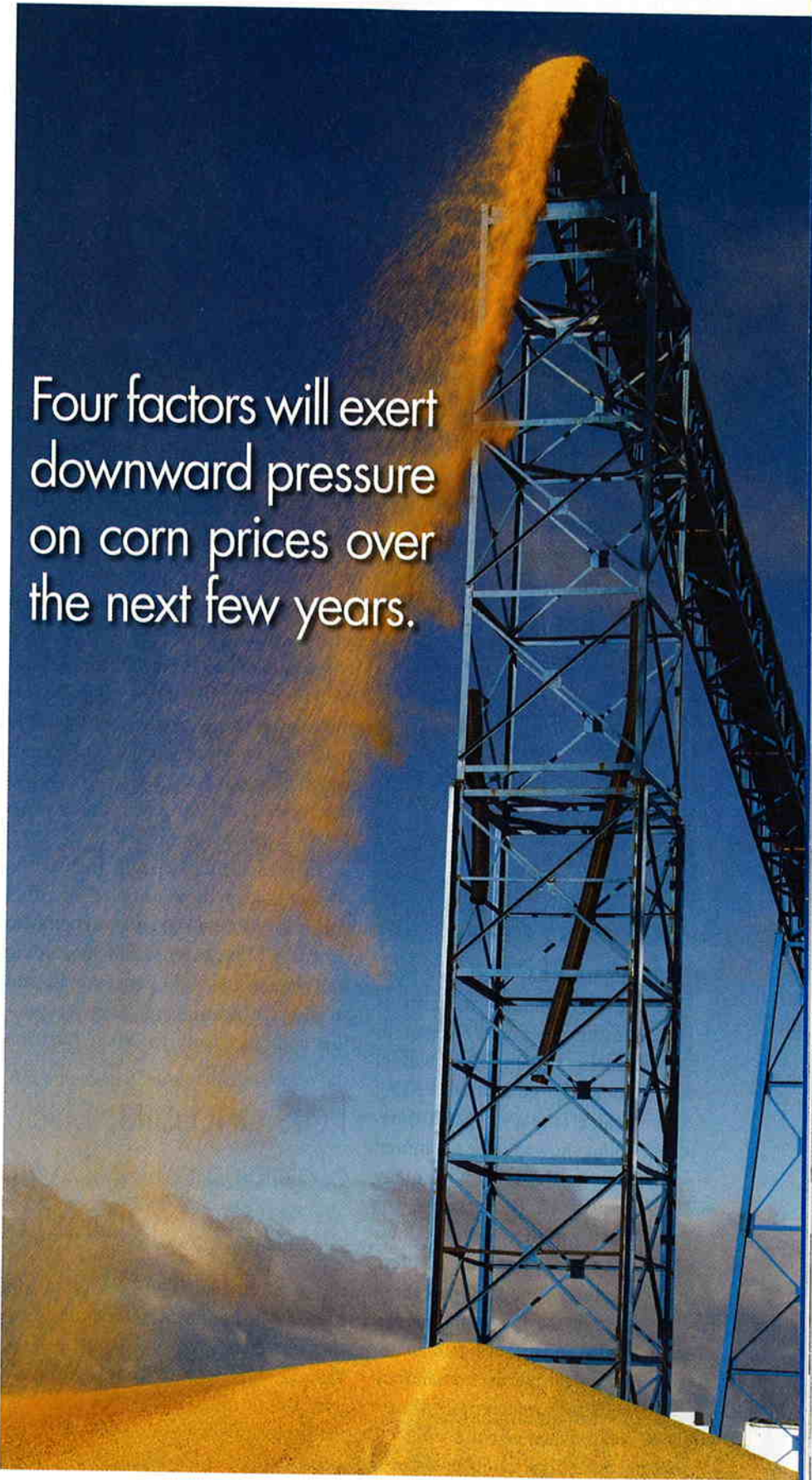
Cost Of Feedstocks

In many ways we can expect feedstock prices to follow the same trend as ethanol (and gasoline), but with a lag. When ethanol prices exploded due to the replacement of MTBE in gasoline, corn prices lagged and ethanol producers made huge profits with cheap corn and high ethanol prices. Now corn prices are responding in a big way to the extra demand and subsidized economics of ethanol.

How long will high corn prices last? I have no idea. But four factors will all exert downward pressure on corn prices over the next few years. First, significant acreage is being shifted from soybeans to corn, which should increase the short-term supply. Second, improved genetics and higher corn yields should continue to grow the long-term supply at a faster rate than acreage alone would imply. Third, higher corn prices, themselves, will slow down the rate of the ethanol industry's expansion, and we have recently seen several big ethanol projects cancelled or delayed. Finally, the gradual conversion of feedstock for ethanol from corn to cellulosic and biomass technologies will eventually reduce the amount of corn needed for ethanol. Just remember the old Wall Street adage: "Markets can remain irrational longer than you can remain solvent."

Our assessment is that the late economist Milton Friedman was right – there is no such thing as a free lunch. If I was in the building construction business and the price of steel doubled, would I just sigh and resign myself to losing money? Nope. I'd raise my price. Maybe the poultry industry will need to as well. ■

Dr. Jim Budzynski is a principal at BrightPath Capital, Carmel, Ind., a private equity firm focusing on investing in companies in food and agriculture. He can be reached at (317) 818-2680 or emailed at jim@bpathcap.com.



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