July 2015

Blending: Ethanol's New Growth Sector

Chad E. Hart
Iowa State University, chart@iastate.edu

Follow this and additional works at: http://lib.dr.iastate.edu/iowaagreview

Part of the Agricultural and Resource Economics Commons, Agricultural Economics Commons, Industrial Organization Commons, and the Oil, Gas, and Energy Commons

Recommended Citation
Available at: http://lib.dr.iastate.edu/iowaagreview/vol13/iss4/3

This Article is brought to you for free and open access by the Center for Agricultural and Rural Development at Iowa State University Digital Repository. It has been accepted for inclusion in Iowa Ag Review by an authorized editor of Iowa State University Digital Repository. For more information, please contact digirep@iastate.edu.
The evolution of the ethanol industry continues at a brisk pace. U.S. ethanol production capacity has grown tremendously over the past several years. But recent lower ethanol prices, combined with still strong corn prices, have put a damper on continued expansion. Figure 1 shows the price movements for ethanol in 2007. At the beginning of the year, the ethanol price started out at around $2.50 per gallon. But prices have backed off since then, with recent ethanol prices at between $1.50 and $1.70 per gallon. This price drop has tightened margins at ethanol plants across the nation. But at the same time, the price drop has provided new growth opportunities in ethanol, on the blending side.

Ethanol Blends
Ethanol is blended with gasoline for a variety of reasons. It is an octane booster; it is an alternative fuel source for use in conventional fuels; and it is an additive that can be used to meet Clean Air Act standards. Ethanol received a boost by means of this last reason when the additive MTBE was removed from the market. Figure 2 shows the percentage of U.S. gasoline that has been blended with ethanol since January 2005. The MTBE removal occurred mostly in May 2006, and the graph shows the jump in ethanol blending, from 35 percent to 45 percent, over the course of that month. Ethanol blending has exceeded 50 percent for a couple of months over the past year at times when ethanol prices have dropped.

These monthly spikes are likely due to ethanol being used as a relatively cheaper alternative fuel source for conventional fuels. And given ethanol’s current pricing situation, this type of usage will continue to grow as more ethanol enters the fuel market as part of conventional gasoline.

Regional Differences
The gasoline market can be broken down into two components: the conventional and the reformulated gaso-
line markets. Reformulated gasoline is gasoline that is manufactured to meet Clean Air Act requirements and is mainly marketed in large urban areas on the East and West Coasts. It was in this reformulated gasoline market that ethanol replaced MTBE. Table 1 outlines U.S. ethanol blending in July 2007. In that month, over 11 billion gallons of gasoline was produced, and nearly half of that total was blended with ethanol. Roughly two-thirds of the ethanol-blended fuel entered the reformulated gasoline market, with the rest entering the conventional gasoline market. But when you look at various regions of the country, the blending story changes. On the coasts and in the southern United States, nearly all of the ethanol-blended fuel is reformulated. But for the Midwest and Northern Plains, most of the ethanol-blended fuel is sold as conventional gasoline. With ethanol-blended fuel already dominating the reformulated gasoline market, the new growth area for ethanol is in the conventional gasoline market.

Figure 3 shows the usage of ethanol-blended fuels across the nation in 2004 (the latest year in which data is available). The map shows three main areas for ethanol usage: California, the upper Midwest, and New York and Connecticut. The California and New York markets are the largest reformulated gasoline markets; even before the phase-out of MTBE, ethanol had captured a sizable portion of those markets. The upper Midwest market was mainly on the conventional gasoline side, with cheaper, locally sourced ethanol and state-level incentives and mandates. But ethanol usage outside of these markets was small to non-existent. In 15 states, no ethanol-blended fuel was sold. In 13 additional states, use of ethanol-blended fuel was below 5 percent. So ethanol has several additional markets it could potentially tap into. And the lower prices we are now seeing for ethanol provide some economic incentives for gasoline blenders to target ethanol-blended fuels in the southern United States, New England, and the Pacific Northwest, where ethanol has not traditionally been sold.

### Pricing Factors

Table 2 displays the price incentives for blending ethanol. To obtain a consistent series of publically available prices, the calculations shown here use gasoline and ethanol rack prices from the Omaha, Nebraska, market for January and September of 2007. In January, a gallon of gasoline was priced at $1.49 per gallon while a gallon of ethanol was $2.26 per gallon. At these prices, an E-10 blend cost 7.7¢ more per gallon.
Policy Choices
If, as seems likely, we are entering a future where policy incentives will be skewed toward rewarding production activities that reduce greenhouse gas emissions, then it is important for the U.S. biofuels industry to take steps to ensure that they are providing low-carbon fuels.

The key factors determining carbon emissions for corn-based ethanol are (1) whether coal or natural gas is used to power the ethanol plant, (2) whether distillers grains are dried or sold wet, and (3) whether expansion of corn acreage comes mainly from reduced acreage of lower-value crops or if idled land is brought into production.

The first of these factors is largely under the control of ethanol plant owners. Not drying distillers grains is feasible only if large beef feedlots or dairies are located near the ethanol plants. State and local policies that encourage strategic siting of cattle operations can greatly enhance ethanol’s low-carbon credentials. The last factor is beyond the control of industry. Conversion rates of idled U.S. cropland can be reduced by increasing domestic conservation incentives, such as CRP rental rates. But this policy decision creates a dilemma: if U.S. land is kept idle through higher conservation payments, there will be a larger impact on crop prices and a greater incentive for farmers in other countries to expand production.

If this overseas production were to involve conversion of substantial amounts of idle land that would otherwise never be brought into production, then U.S. corn ethanol likely would not be able to lay claim to the title of low-carbon fuel.