



Domestic Biodiesel versus Brazilian Ethanol Revisited

Scott Irwin and Darrel Good

Department of Agricultural and Consumer Economics
University of Illinois

January 16, 2013

farmdoc daily (3):8

Recommended citation format: Irwin, S. and D. Good. "Domestic Biodiesel versus Brazilian Ethanol Revisited." *farmdoc daily* (3):8, Department of Agricultural and Consumer Economics, University of Illinois at Urbana-Champaign, January 16, 2013.

Permalink: <http://farmdocdaily.illinois.edu/2013/01/domestic-biodiesel-versus-brazilian.html>

In a post on [January 10, 2013](#) we examined the relative profitability of meeting the RFS for advanced biofuels with domestically produced biodiesel and imported Brazilian ethanol. We concluded that even with the \$1.00 per gallon tax credit for biodiesel, price relationships still favored Brazilian ethanol. We received a number of comments from readers in both the public and private sectors pointing out some omissions in the analysis as well as suggestions for alternative analysis. Here we incorporate those comments into an updated analysis of the relative economics of biodiesel and Brazilian ethanol based on prices as of January 10, 2013.

Comments received pointed out:

1. There is an Ad Valorem tax on Brazilian ethanol of 2.5 percent that adds to the cost of that product,
2. Under the scenario of an ethanol blend wall, the substitution of Brazilian ethanol for domestically produced ethanol results in an "opportunity cost" to a blender in the form of lost profit on blending the lower priced domestic ethanol,
3. Relative economics of the two products may vary by location within the U.S.

In addition, prices of various fuels continue to change so that there is a need to continually update the analysis of blending economics.

Table 1 summarizes the relative profitability of Brazilian ethanol and domestic biodiesel using prices at the U.S. Gulf as of January 10, 2013, where CBOB is conventional gasoline blend stock, E100 is 100 percent anhydrous ethanol shipped to a Gulf terminal from Brazil, ULS is ultra-low sulfur diesel, and B100 is 100 percent biodiesel. The opportunity cost for Brazilian ethanol is calculated as the difference between the price of U.S. produced ethanol (\$2.28) and the price of CBOB (\$2.63). The \$0.35 margin is a direct profit to gasoline refiners. Price relationships at the U.S. Gulf on January 10 favored biodiesel blending over the blending of Brazilian ethanol, even without consideration of the opportunity cost of Brazilian ethanol. That cost added substantially to the advantage of biodiesel.

We request all readers, electronic media and others follow our citation guidelines when re-posting articles from *farmdoc daily*. Guidelines are available [here](#). The *farmdoc daily* website falls under University of Illinois copyright and intellectual property rights. For a detailed statement, please see the University of Illinois Copyright Information and Policies [here](#).

Table 1: Blending Economics for Brazilian Ethanol and Domestic Biodiesel

	Gasoline		Diesel		
January 10, 2013	U.S. CBOB Gulf	\$2.63/gal.	U.S. ULS Gulf	\$3.04/gal.	
			U.S. B100 Gulf	\$4.40/gal.	
	E 100 from Brazil	\$2.65/gal	Net profit	\$-1.36/gal	
	Shipping cost	\$0.20/gal	Tax credit	\$1.00/gal	
	Ad Valorem tax (2.5%)	\$0.07/gal	Net profit	\$-0.36/gal	\$-.36/1.5= \$-0.24/gal
	Total cost	\$2.92/gal			
	Net profit	\$-0.29/gal			
	Opportunity cost	\$-0.35/gal	(U.S. produced ethanol= \$2.28/gal)		
	Profit	\$-0.64/gal			

In order to examine the effects of location, we considered the price of B100 and ULSD at Chicago on the same date. The price difference of \$1.33 per gallon resulted in a loss of \$0.22 per gallon for biodiesel, compared to a loss of \$0.29 per gallon at the Gulf. The advantage of biodiesel over Brazilian ethanol at Chicago would be further enhanced by the cost of shipping Brazilian ethanol to Chicago.

Implications

The more complete analysis of blending economics presented here, along with price relationships on January 10, suggest an economic advantage to biodiesel over Brazilian ethanol in meeting the RFS for advanced biofuels. The biodiesel advantage is large and a dramatic change from our analysis last week. It also has potentially far-reaching implications for both U.S. corn and domestic fats and oils consumption in 2013. For example, if Brazilian ethanol imports in 2013 are close to zero, rather than the 830 million gallons we forecast earlier, an additional 300 million bushels of US. corn could be consumed for ethanol and byproduct production. Similarly, if the entire RFS for advanced biofuels is met with biodiesel, biodiesel production would reach 1.83 billion gallons in 2013 (2.75 billion gallon RFS divided by 1.5) rather than the minimum of 1.28 gallons announced by the EPA for 2013. The additional 0.55 billion gallons would require an additional 4.18 billion pounds of biodiesel feedstock in 2013.

There is certainly the potential for substantial pressure on both corn and soybean oil supplies in 2013 given the new incentives for biodiesel production over Brazilian ethanol. This could be particularly alarming for corn given tight old crop supplies. One way of looking at the situation is to determine the increase in the price of soybean oil that is required to make biodiesel once again uncompetitive with Brazilian ethanol, which would help relieve some of the pressure on old crop corn supplies. The analysis here suggests that biodiesel prices would need to increase at least 40 cents per gallon to negate all the cost advantages of biodiesel in meeting the advanced component of the RFS. If there is complete pass through of soybean oil prices to biodiesel prices, at a conversion ratio of 7.55, this implies soybean oil prices would need to increase by at least 5 cents, or about 10% from current levels.

The biofuels and petroleum industries are still adjusting to the changing market realities brought on by the reinstatement of the biodiesel tax credit. It is not yet clear how the RFS for advanced biofuels will be met in 2013, but clues will be provided by changing price relationships and the pace of weekly ethanol imports available [here](#) and the pace of biodiesel production reported [here](#).