Policy, Consolidation and Investment Trends in Brazilian Biofuels - Summary
BERKELEY BIOECONOMY CONFERENCE
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Panel Topic: Brazil and the Challenges of an Expanding Bioindustry – "Policy, Consolidation and Investment Trends in Brazilian Biofuels."

Conference / Location: Berkeley Bioeconomy Conference, March 27-28, 2013, University of California, Berkeley, CA.

Session Topic Description: The history of the ethanol market in Brazil, and how gas prices, supply and demand, government policy and subsidies, sugar prices, technology, the discovery of subsalt oil, and foreign investment have advanced and changed Brazil's ethanol industry over time.

Moderator & Panelists: Reese Ewing, Senior Commodities Correspondent at Thomson Reuters, Sao Paulo, Brazil. Email: reese.ewing@thomsonreuters.com.

Design, Methodology, Approach: Presentation with Q&A discussion following.

Main Discussion Points: Ewing opened the presentation with a baseball metaphor and quote, "The future ain't what it used to be," describing the forces at work in the bioenergy industry in Brazil given the current uncertainty with Brazil's biofuels policy, the bubble, or bust, of consolidation happening in the industry, and the technology of supply and demand driving change.

He started with the history of ethanol in Brazil, beginning with the sugarcane-based ethanol fuel program called "Pro-Alcohol," that dates back to 1975 driven by the 1973 oil crisis and shortage. The nationwide program was financed by the government to phase out car fuels made from fossil fuels, transitioning the fuel supply to ethanol. At the time, Brazil was importing roughly 90 percent of its oil. The first phase of the program was a blend of anhydrous ethanol into all gasoline produced at a 10-22 percent blend, which has since been increased to a blend of 18-25 percent. The transition was supported by government subsidies, price controls, policy and technological developments.

Fiat launched the first car to run on hydrous ethanol fuel in 1979, becoming the first commercial ethanol-powered car sold in the world. It issued in a decade of growth in hydrous ethanol. By the late 80s, ethanol supplies collapsed in the face of cheap gasoline, bad weather, and firm sugar prices, which in turn caused "alcool" (alcohol) car sales to collapse. This resulted in the Brazilian government lifting price controls and subsidies, ushering in the era of flex-fuel cars. The flex-fuel car was more efficient, modernized the industry, and renewed consumer demand.

In 2003, Volkswagen introduced their first flex-fuel subcompact car called the Gol, and by the following year Fiat, Ford, GM and others followed with their own models. 2003 to 2008 marked a period of heavy private investments in the industry, with over $15B per year invested in new sugar cane mills and processing. But by 2008, the heavy leveraging of credit to finance the

expansion of sugar cane mills burst, causing investments in replanting cane to drop as mills cash flow could not keep up with their growing debt. The bursting of the credit bubble led to a rapid consolidation of companies. ETH Bioenergia bought out Brenco, Bunge acquired Moema, Petrobras bought half of Guarani, and Louis Dreyfus took over Santelisa Vale to eventually create the world's second largest sugarcane processor. BP acquired its remaining share of Brazilian biofuel company Tripical BioEnergia. At the same time, a wave of foreign country investments in local sugarcane companies occurred. And by 2009, flex-fuel car sales made up more than 90 percent of all compact/subcompact vehicle sales and demand for flex-fuel cars quickly started to outstrip Brazil's supply for ethanol, despite massive investments in production.

With the growing externalities of sugarcane burning and the labor issues associated with manual cutting and burning, the Brazilian government became committed to mechanizing the industry, and by 2014 the state of Sao Paulo signed an agreement with the government to end all sugarcane burning and transition to mechanical harvesting. This translates to 87 percent of the dedicated sugarcane area will be mechanized, up from 81 percent in 2012, and by 2014 the state will be fully mechanized. Mechanization means both benefits and challenges. Some of the benefits include plummeting jobless rates and investments in replanting are improving yields and increasing productivity. But a big challenge is pest management, as well as addressing a displaced labor force that needs retraining to develop new skills. Also, there are rising costs to improve crop yields and rising labor costs to keep up with higher minimum wages.

This year, 2013, weaker sugar prices have meant less profit for mills but mills have nonetheless been producing more. Demand for sugar has grown steadily at 2-3 percent per year, with China now Brazil's leading buyer of sugar and India a big potential importer. Production is still profitable, with mills being paid a premium for anhydrous ethanol, though mills are now at near full capacity. The anhydrous export market grew over 40 percent to 3B liters in 2012, and estimates suggest it could reach 4B liters in 2013. Ewing thinks Brazilian ethanol is highly competitive in the U.S. with RINs set at 35-40 cents per gallon. U.S. mandates and policy have driven Brazil to export 71 percent of its ethanol to the U.S. in 2013.

Outcomes & Analysis:
Toward the conclusion of the presentation, Ewing discussed how Brazil's government policies on gas prices are holding back investments in ethanol, with gas prices now below international prices. The discovery of presalt oil and gas could significantly increase Brazil's existing oil reserves, which is having a major impact on the biofuels industry. This, combined with the technological advancements happening with hydraulic fracking, such as horizontal drilling, is shifting current energy investments and strategy. With Brazil's growing demand for light vehicles increasing every year, government policy makers will have to decide what the long-term path is for the future of Brazil's energy production. To meet growing demand, ethanol production would need to be prioritized over sugar (as food) by sugarcane producers and the government would need to mandate a clear policy around the amount of anhydrous ethanol blend in gasoline in order to improve margins.

Keywords: Brazil bioenergy, Brazil biofuels, Pro-Alcool Program, Brazil's ethanol fuel program, anhydrous ethanol, flex-fuel car, Volkswagen Gol, Brazilian sugarcane industry.

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