Impact of Ethanol on Crop and Livestock Sectors

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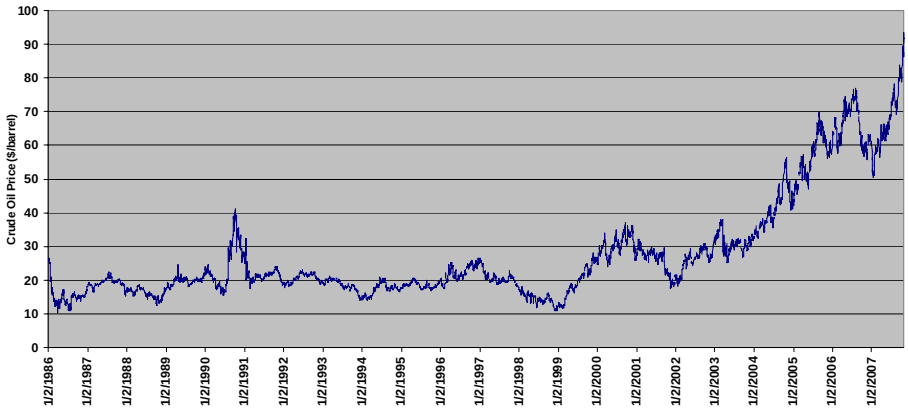
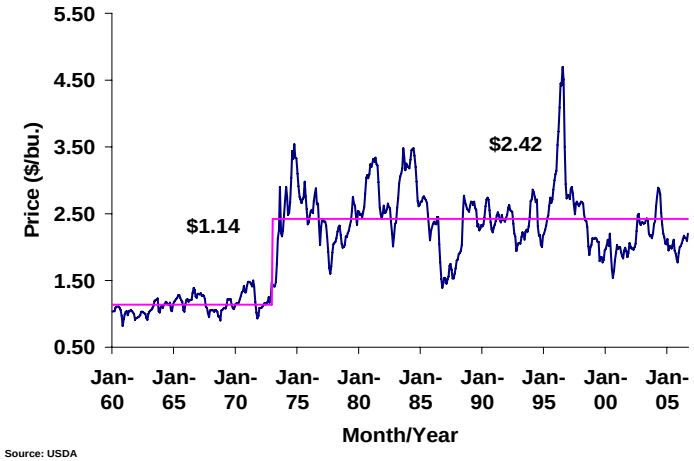
2007 Illinois Farm Economic Summit
The Profitability of Illinois Agriculture: Where to from Here?

Why ethanol?

Reason #1



Reason #2



Source: USDA

Reason #3

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51 cents

Resulting in:

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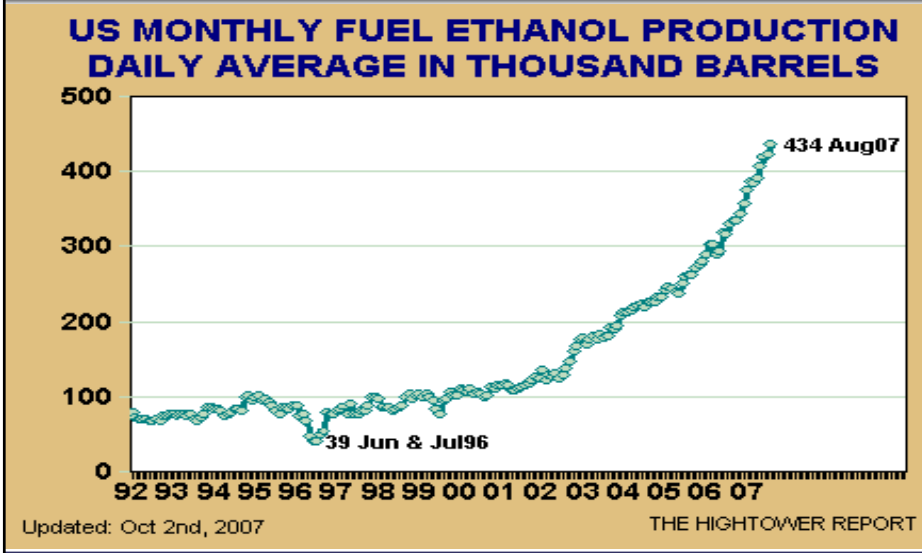

Valuation of ethanol

	$2.00 corn	$4.00 corn
Mfg costs:	$1.62 ethanol	$2.34 ethanol
Effect of:		
Co-products	$1.39	$1.90
Subsidy	$0.88	$1.39

Other effects on value

+

- Meets RFS
- Octane Booster
- Oxygenate
- State tax breaks

–

- Gasoline substitute at about 67%
- Blending, logistics, and transportation

World Biofuels

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Biofuel blending targets, selected countries

Country	Feedstocks		2007 production forecast (million gals.)		Blending targets
	Ethanol	Biodiesel	Ethanol	Biodiesel	
Brazil	sugarcane, soybeans, palm oil	castor seed	4,966.5	64.1	25 percent blending ratio of ethanol with gasoline (E25) in 2007; 2 percent blend of biodiesel with diesel (B2) in early 2008, 5 percent by 2013.
Canada	corn, wheat, straw	animal fat, vegetable oils	264.2	25.4	5 percent ethanol content in gasoline by 2010; 2 percent biodiesel in diesel by 2012.
China	corn, wheat, cassava, sweet sorghum	used and imported vegetable oils, jatropha	422.7	29.9	Five provinces use 10 percent ethanol blend with gasoline; five more provinces targeted for expanded use.
EU	wheat, other grains, sugar beets, wine, alcohol	rapeseed, sunflower, soybeans	608.4	1,731.9	5.75 percent biofuel share of transportation fuel by 2010, 10 percent by 2020.
India	molasses, sugarcane	jatropha, imported palm oil	105.7	12.0	10 percent blending of ethanol in gasoline by late 2008, 5 percent biodiesel blend by 2012.
Indonesia	sugarcane, cassava	palm oil, jatropha	--	107.7	10 percent biofuel by 2010.
Malaysia	none	palm oil	--	86.8	5 percent biodiesel blend used in public vehicles; government plans to mandate B5 in diesel-consuming vehicles and in industry in the near future.
Thailand	molasses, cassava, sugarcane	palm oil, used vegetable oil	79.3	68.8	Plans call for E10 consumption to double by 2011 through use of price incentives; palm oil production will be increased to replace 10 percent of total diesel demand by 2012.
United States	primarily corn	soybeans, other oilseeds, animal fats, recycled fats and oil	6,498.7	444.5	Use of 7.5 billion gallons of biofuels by 2012; proposals to raise renewable fuel standard to 36 billion gallons (mostly from corn and cellulose) by 2022.

-- negligible
Sources: FO Licht; USDA.

ECONOMIC RESEARCH SERVICE/USDA

Ethanol and Gasoline Prices

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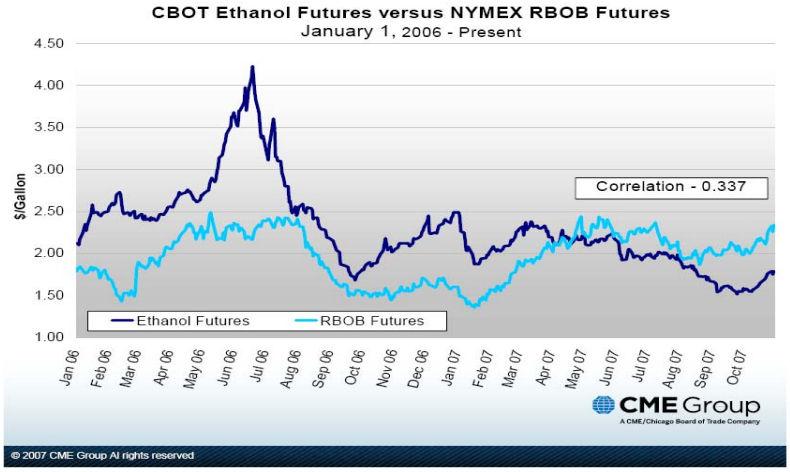
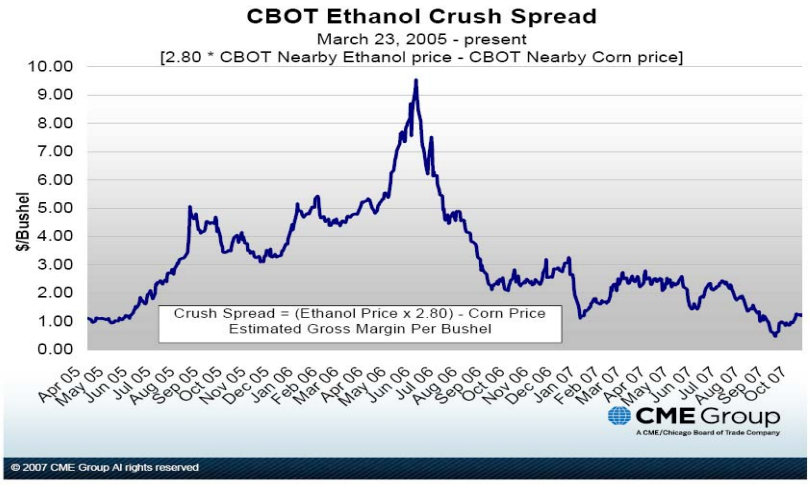


Omaha wholesale

	Gasoline	Ethanol
2004:	$1.25	$1.69
2005:	$1.66	$1.80
2006:	$1.94	$2.58
Jan 2007:	$1.49	$2.26
Jul 2007:	$2.49	$2.51
Oct 2007:	$2.24	$1.79

Ethanol-Corn Spread



Long run equilibrium corn price results from entry/exit into ethanol industry, driven mostly by:

- Long run expectation of crude oil price
- Expected level of federal subsidy

Why is entry/exit so important with ethanol and not other uses?

1. Long run equilibrium price has been well below $3.50
2. Ethanol production will have a negligible effect on gasoline price, yet
3. It is a significant part (greater than 20%) of corn production

What adjustments will be needed to reach the new, $3.50 equilibrium

1. Depends on the elasticity of demand for other uses of corn
2. Depends on the elasticity of supply for corn as well as other crops
3. See Chapter 2 of Ethanol Report on CD if interested in details

Where does it end??

- A high long-term oil price expectation dictates the corn price
- There will be a movement up the non-ethanol demand curves for corn (mostly feed demand domestically and abroad), causing substitution of land
- The form of this substitution world wide will depend on supply responses in those parts of the world that can add crop acres, perhaps Brazil and the Ukraine

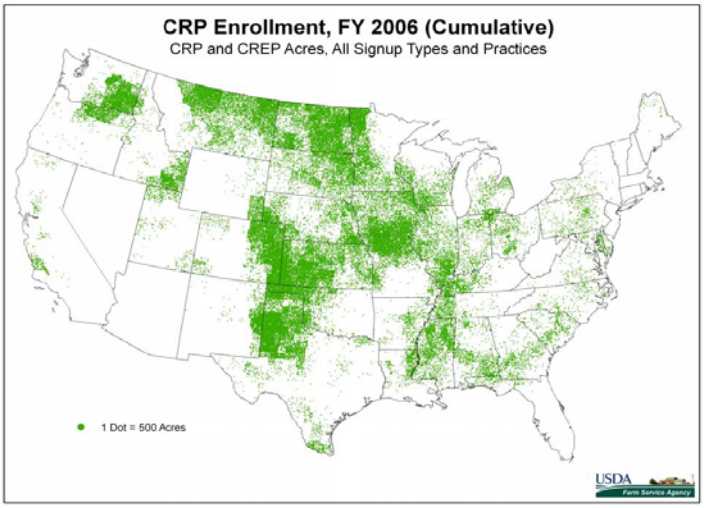
Ultimately, in the U.S., the biggest effects are:

- Increase in food prices (meat in particular) with relatively little decrease in consumption
- A significant reduction in U.S. crop exports
- Higher land prices/rents

The push back to these conclusions tend to focus on:

- Yields
- Exports
- CRP

Current CRP acreage



Other factors determining the new state of equilibrium

- U.S. subsidy policy – very important
- RFS level – ??
- 10% ethanol versus …?
- Tariff policies – important but unlikely to change
- Breakthroughs in cellulosic technology.

Cellulose versus corn

- We know little about the economics of cellulosic processing, transportation, or production
- Many questions remain at both the firm and sector levels
- Appeal of cellulose usually based on
  - yield of ethanol per acre (miscanthus)
  - potential to grow it on "marginal" land
  - avoid direct food vs energy tradeoff
  - carbon valuation

Preliminary estimates indicate

- About a 60-cent per-gallon difference in ethanol cost when using miscanthus vs corn, when corn is $3.50
  - Accounts for production, opportunity cost of land, storage/transportation, processing, with carbon value = 0
  - Even when carbon is assumed to be $10/ton, the difference is close to 50 cents
  - If this is in the ball park then what would happen if the subsidy is aimed differently?
- About a 90-cent per-gallon difference in ethanol cost when using miscanthus vs corn, when corn is $2.00

Finally, community impacts

- Three locations in Illinois considered
- Details are in Chapter 5
- General results
  - Local economic effects relatively small
  - Varies by level of urbanization

Thank you!