


**Bioenergy: Risks / Trends  
in Finance**


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## CoBank

- Presently involved in financing several bio-diesel projects and approximately 50 ethanol plants
- Gross loan commitments to renewal fuels industries over \$1.3 billion
- Net commitments held by CoBank over \$800 million




### Ethanol Industry Stats (October 2007):

- 129 - 135 (?) plants presently in production with total capacity of approximately 7 - 7.7+ (?) billion gallons
- Another 80 - 83 (?) under construction or expanding
- Total capacity expected\* to increase by 4.5 - 7+ billion gallons, to 11.9 - 14+ billion gallons within the next 2 years, the majority of the increase by early 2009
  - (subject to widely varying assumptions about which projects will be completed and when)
- Additional plants in the planning stage



### Risk Assessment / Issues:


- Crude oil and related fuel values – high headed higher, or speculative bubble about to burst ?
- Ethanol “Value”/Selling Price – relative to gasoline ?
- Feed Stock Risk – cost of corn, and lack of direct relationship to value of ethanol (supply vs. demand issues)
- Distillers Value Risk – selling price as an offset to the cost of corn
- Transportation / Logistics Risk – ability to ship, unload, and distribute ethanol and DDG’s
- Imports Risk – competition from Brazil and sugar cane-based ethanol
- Political Risks – current vs. future tax incentives and mandated usage requirements

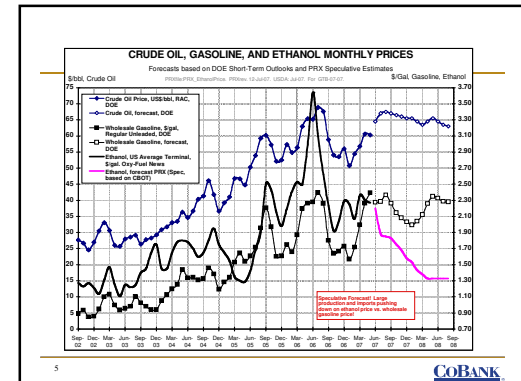


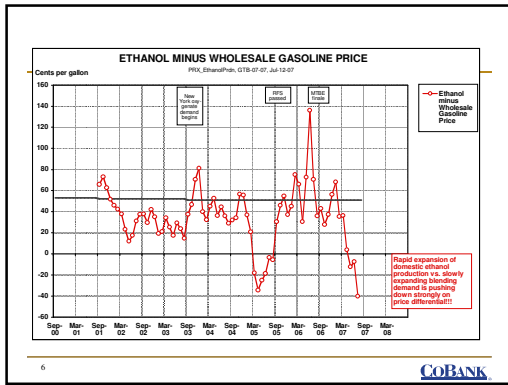
### Risk Assessment / Issues:

#### Ethanol Market Value vs. Gasoline

- Conceptually ethanol is worth price of gasoline (RBOB) plus 51 cent/gallon federal blending credit.
- Not, though, always the case based on ethanol’s own market supply/demand characteristics
- Per OPIS (October 22), “cash ethanol lately trading at \$1.67/gal for October .....but with spot unleaded prices in Chicago over \$2.20/gal, it still implied an excellent blending advantage versus gasoline - a fat \$1.04/gal once the federal blending credit was included.”







### Cornbelt Model Ethanol ROIs, Cts/Gal

PRX\_BS\_Regions\_07B-06-10, Oct-12-06

Corn Price	Ethanol Price				
	\$1.25	\$1.50	\$1.75	\$2.00	\$2.25
\$2.00	\$0.19	\$0.44	\$0.69	\$0.94	\$1.19
\$2.50	\$0.07	\$0.32	\$0.57	\$0.82	\$1.07
\$3.00	(\$0.05)	\$0.20	\$0.45	\$0.70	\$0.95
\$3.50	(\$0.17)	\$0.08	\$0.33	\$0.58	\$0.83
\$4.00	(\$0.30)	(\$0.05)	\$0.20	\$0.45	\$0.70
\$4.50	(\$0.42)	(\$0.17)	\$0.08	\$0.33	\$0.58
\$5.00	(\$0.54)	(\$0.29)	(\$0.04)	\$0.21	\$0.46

DDG price moved in relation to corn price. Gas set at \$7.00 per cu ft.  
*The future of corn supply-demand depends as much on the future of ethanol price as any other factor, and ethanol price has now declined from its above \$3.00 levels.  
 The job of corn price is easier, of course, the lower one's opinion of ethanol price!*

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- ### Bio-Diesel Industry Stats (October 2007):
- Industry capacity has increased from less than 100 million gallons to over 300M within the past 2 years
  - Dozens of additional plants under construction
  - Forecast capacity estimates range as high as 1.5 billion gallons within the next 24 months
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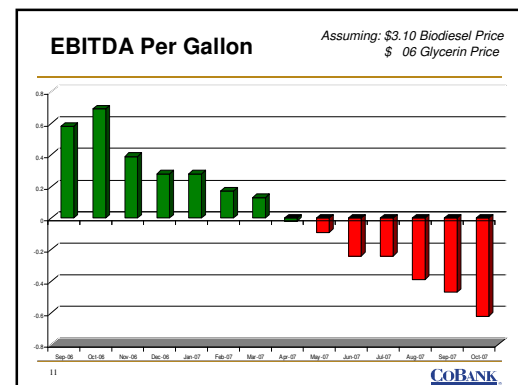
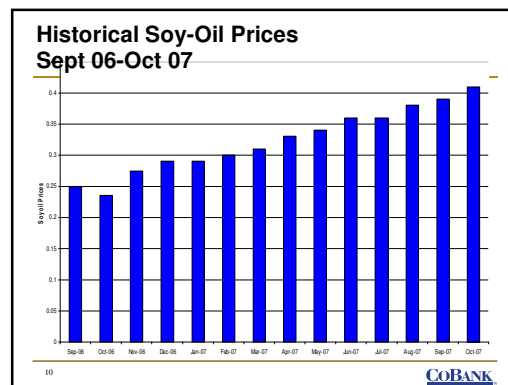
### UNITED STATES SOYBEAN OIL SUPPLY-DEMAND

PRX\_C\_US\_BA\_07B-07-10, Oct-12-07

Item	Unit	Cents (per bushel)										
		97-98	98-99	99-00	00-01	01-02	02-03	03-04	04-05	05-06	06-07	07-08
Soybean crush	mt bu	1597	1590	1579	1640	1700	1617	1530	1696	1739	1806	1795
Meal	mt bu	21.2	21.3	21.2	21.2	21.1	21.6	21.2	21.3	21.6	21.3	21.3
Soyoil production	mt bu	17962	17926	17962	18448	18928	18379	17147	19213	20247	20496	20194
Soyoil supply	mt bu	19662	19379	19471	20495	21766	20878	18800	20392	21960	23569	23201
Soyoil domestic use	mt bu	15147	15507	15598	16390	16763	17102	16939	17554	17607	18791	19005
Soyoil net exports	mt bu	2062	2203	1428	1287	2554	2123	582	1325	1181	1770	1423
Soyoil total use	mt bu	18209	17770	17424	17657	19267	19225	17621	18679	18888	20561	21348
Soyoil carry-out	mt bu	1463	1609	2047	2836	2499	1629	1179	1713	3072	3008	1853
US population	mt	268.9	271.4	273.8	276.1	279.2	282.2	285.2	288.0	290.8	293.6	296.4
Domestic SBO per cap	bu	56.3	57.4	58.4	59.4	59.9	60.6	59.4	60.3	60.9	64.0	67.2
Avg price, Decatur, acid	cents/bu	25.8	19.9	15.6	14.2	16.5	22.0	30.0	23.0	23.4	31.0	36.5
Avg price, Decatur, model	cents/bu											
<b>Estimated domestic:</b>												
Soyoil food use	mt bu	14247	14067	13398	15790	16113	16322	16338	16794	17607	18241	18875
Soyoil industrial use	mt bu	600	600	600	600	600	600	600	600	600	2550	3250
Soyoil other	mt bu	82	82	82	82	82	82	82	82	82	349	445
<b>Estimated crush margin (Central IL)</b>												
Soyoil price	cents/bu	25.8	19.9	15.6	14.2	16.5	22.0	30.0	23.0	23.4	31.0	36.5
Soyoil yield per bu	bu/bu	11.2	11.3	11.3	11.2	11.1	11.4	11.2	11.3	11.6	11.3	11.3
Soyoil value per bu	cents/bu	291	224	176	159	183	251	336	281	272	382	411
Soybean price	\$/bu	185	139	108	174	168	182	256	183	174	205	235
Soybean yield per bu	bu/bu	43.8	43.8	43.8	43.8	43.8	43.8	43.8	43.8	43.8	43.8	43.8
Soybean value per bu	cents/bu	606	393	307	380	397	398	561	401	381	450	515
Soybean price	cents/bu	647	493	463	454	438	553	734	510	566	643	835
Oil & meal value per bu	cents/bu	696	528	544	539	551	648	897	681	684	802	926
Crush margin	cents/bu	49	35	81	85	113	92	163	151	85	159	90

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### Current State of Economics:

- **Ethanol** – plants presently remain profitable, but the future is uncertain given pending additional supply relative to demand, combined with logistics issues and “blend wall” concerns
- The media reports several plant construction projects have been cancelled or postponed
  
- **Bio-Diesel** – current economics are challenged given feed stock costs
- The media reports several plant construction projects have been cancelled or postponed, and also some start-ups will be delayed until economic circumstances improve

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### “Wall Street” \$\$\$\$ [Ethanol]

- Raw Material (Corn) / Finished Product (ethanol) relationship (lack thereof) used to “scare off” Wall Street.
  
- Tremendous interest developed, both for debt and equity investments (concerned about being “left out”).
- Project finance (leveraged) structures (equity % vs. other industries).
- Was a ready market to sell deals into.
- Significant fees; not much “skin”.

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### “Wall Street” \$\$\$\$

- Traditional lender’s portfolios “full” or near full
- Changed economics and shaken assumptions have lead to little or “no appetite” for additional bio-fuels lending (expansions and additions vs. new greenfield projects)
- Substantially increased project costs
- “Leverage”, if available, has rapidly decreased during recent months
- Understanding of debt/gal. vs. capital %, and “betting on the come” lending

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### Financing Structures / Issues [Bio-Diesel]

- Total capital needs for bio-diesel projects less than ethanol plants, which broadened the field of lenders with varying experience in industry
- “Leverage” in terms of percentages of debt and equity vs. viewed on a per gallon basis
- State and USDA guarantees more common
- “Structure” and adequacy of working capital (i.e., funded as “permanent” vs. short-term)
- Rearview mirror vs. windshield view of economics
- “Worst case” scenario; who has the lowest cost AND deepest pockets ??

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### Summary

- Confidence is high that the bio-fuels industry is here to stay, and will continue to grow
- Industry risks are, though, significant, with substantial continued economic volatility anticipated
- Consolidation within both ethanol and bio-diesel industries likely
- Well located, well capitalized, low-cost producers will survive, whereas projects lacking such attributes represent significant risk to capital providers
- Politics and crude oil prices remain “wild cards”

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