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global farming and food systems

Food Prices 2008: The “Why” and “How Much” of Food Cost Increases

National Chicken Council,
U.S. Poultry & Egg
Association

Date: 4-7-08

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Potential causes of 2007-2008 food price increases

- U.S. government monetary and fiscal policy?
- Weak U.S. dollar?
- Increased food demand of China/India?
- Crop production issues and weather?
- Increasing employment costs?
- Increasing energy costs?
- Increased demand for crops for biofuels?

And the answer is:



All of those!

Be Careful of Your Sources: Two Quotes from Informa Economics

Analysis of Potential Causes of Consumer Food Price Inflation November, 2007

- "... generally, there has historically been very little relationship between corn prices and consumer food prices."
- Considered impact of ethanol on corn only, ignored impact on other commodities
- Funded by Renewable Fuels Association

Hogs and Pork Update, HP 08-03, March 20, 2008

- "Particularly worrisome are forecasts that the high feed costs are likely to become a permanent structural feature of the market, as a result of US ethanol policy."
- "US pork production will be scaled back to a level that leads to higher pricing, making sustained production feasible."
- Looks at total impact on feed costs
- Informa newsletter paid for by, and targeted at, livestock industry clients

Hoosier pig farmers struggling with rising feed costs and market oversupply

By Jeff Swiatek

April 6, 2008

GREENFIELD, Ind. -- Every Monday and Friday since January, as two livestock trucks have pulled away from his hog farm with 360 or so head of hogs bound for market, Mike Lewis mentally writes off another \$3,000 to \$4,000 of equity in his farm.

Why biofuels?

- Increased demand for crops for biofuels
 - Energy value of crops increases by higher fuel prices
 - New demand on top of increasing food demand
 - Boosted significantly by public policy
 - Mandated use (RFS of 9 billion gallons in 2008)
 - High levels of biofuel subsidies (min. tax credit of \$0.51/gal)
 - High tariffs on imported ethanol (\$0.54/gal)

Feed costs, energy prices and energy policy

- Higher energy prices = higher value of ethanol
- Higher ethanol value = higher corn value
- Federal subsidies reduce costs of ethanol compared to food uses
- Higher energy prices + subsidies = higher corn demand
- Higher corn demand = higher corn prices
- Higher corn prices = less acreage and higher prices for other crops

Economics 101

Income and wealth are created by the act of producing goods or services with value to their consumers.

Subsidies can re-direct, but not create, income or wealth.

Why now?

- Until 2005/2006
 - Gasoline/diesel prices low relative to feedstocks
 - Federal supports designed to promote niche use
 - Mandates too small to affect demand
- Today
 - Gasoline/diesel prices much higher
 - Feedstock energy value above 2005 feed value
 - Fixed Federal subsidies boosting feedstock values
 - Both energy prices and support matter

Effects of policy are significant...

- Ethanol supply double market-driven level
- Demand for corn increased 12-15%
- Corn acres increase, other crops decrease
- Costs of major food and feed crops doubled, or more, since 2005
- Higher costs still working through the system

Tax credit/RFS effects

- Fixed tax credit/gallon
 - Increases demand for the biofuel
 - Market value of biofuel inflated
 - Feedstock value/price increases
 - Quantity of biofuel supplied increases
- RFS
 - Creates price insensitive demand
 - Result is possible feedstock price instability

Long term implications

- Potential demand for ethanol/biodiesel unlimited relative to feedstock production
- Fuel prices linked to crop prices
- Cannot “produce our way out”
- Support programs have heavy influence on:
 - Biofuel production
 - Feedstock prices
 - Potential feedstock price instability
 - Supply of crops available for food use

Modeling energy policy effects

- Biofuel market value set at energy value
- Energy prices taken as given
- Feedstock supply/demand/prices estimated
- Tax credits and RFS added
- Feedstock supply/demand/prices re-estimated
- Difference is effect of the policy

Results – no tax credit or RFS for 2007/2008 crop year (*policy effect*)

- Corn market - higher gasoline prices cause:
 - Higher ethanol demand
 - Corn demand and prices increase
 - Corn value \$2.77/bu. (+\$1.33/bu.)
 - Ethanol production 4.5 bgy (+4.2 bgy)
 - Ethanol price \$1.69/gallon (+\$0.51/gal.)
 - Corn acres 76 mill. (+10.5 million)
 - Ethanol production just exceeds 2008 RFS

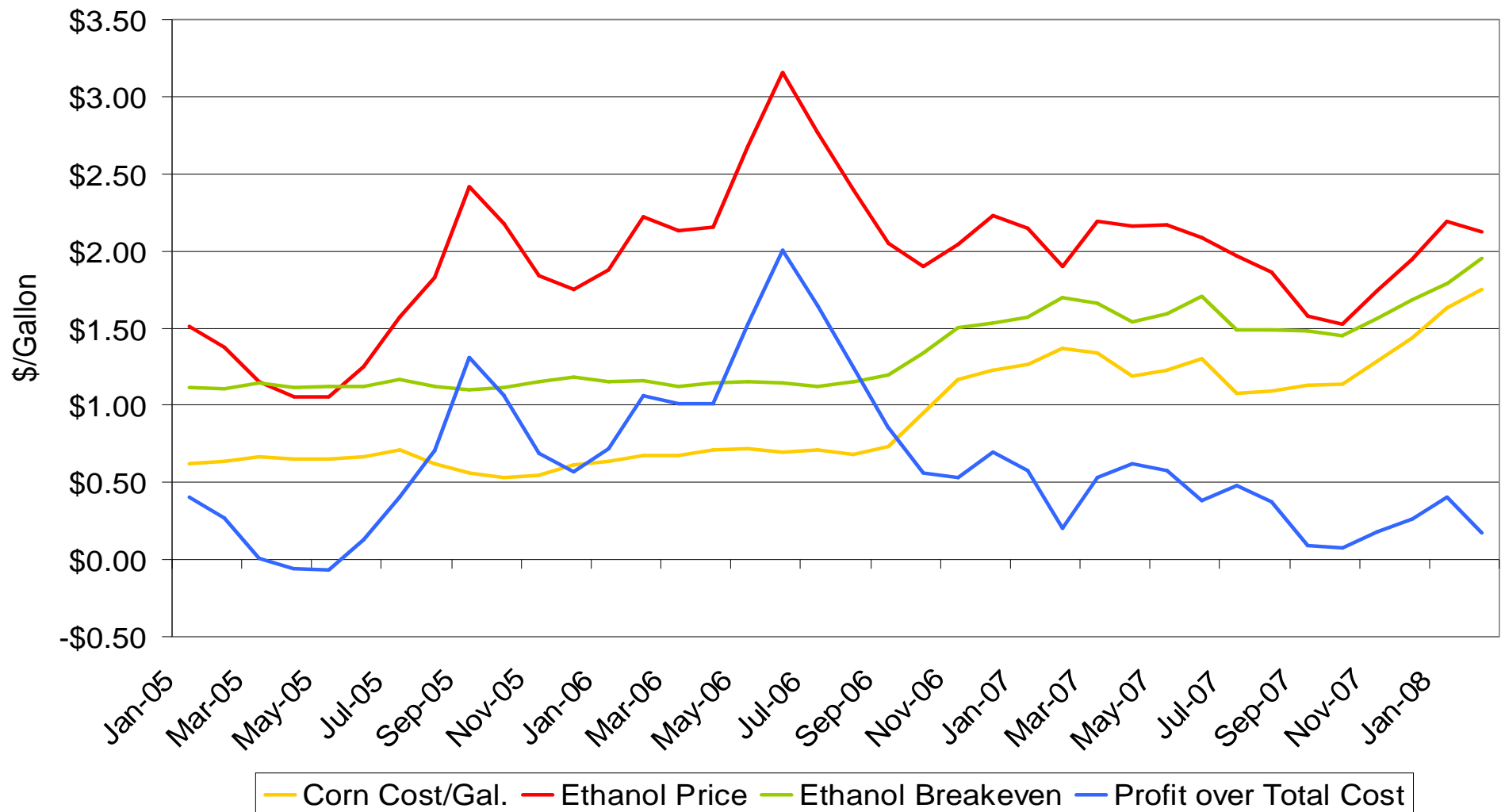
Results – ethanol tax credit for 2007/2008 crop year (*policy effect*)

- Soybean market
 - Higher gasoline prices and ethanol tax credit cause:
 - Higher ethanol demand
 - Corn demand and prices increase
 - Soybean acres 62.8 million (-9.2 million)
 - Soybean production 2,585 b. bu. (-378 b. bu.)
 - Soybean meal price \$320/ton (+\$120/ton)
 - Soybean oil price \$0.475/lb. (+\$0.225/lb.)
 - Soyoil priced out of biodiesel production

Results after 2007/2008 crop year

- In 2009 ethanol production capacity far exceeds corn supply available
- Corn prices bid up to variable cost breakeven for ethanol production
- Some ethanol plants will shut down
- Ethanol industry losing money
- Farm level corn price \$5.00 or higher?

Iowa State ethanol model – effects of rising corn prices on ethanol profits



Corn demand from ethanol sector

Ethanol Plants	Rated* Capacity (billions of gallons per year)	Corn Needed (billion bushels) Rated-Realistic
Existing (147)	8.52	3.2-3.5
Expanding (6) or Under Construction (55)	5.08	1.8-2.0
Total	13.6	5.0-5.5

Plant data from Renewable Fuels Association
Corn needed based on 2.75 gallons ethanol/bushel

* Ethanol plants are certified conservatively and can generally operate at 110% or more of rated capacity

Limitation on corn for ethanol

- Federal mandate for corn ethanol in 2008 is 9 billion gallons, or 3.3 billion bushels of corn.
 - Guaranteed market
- Anything beyond that is market-priced and must compete with wholesale cost of gasoline
- Ethanol has 66% of the net energy of gasoline
- Fuel companies get \$0.51/gallon tax break, even beyond the mandate

Limitation on corn for ethanol

- Therefore, ethanol beyond mandate is attractive at 66% of gasoline prices + tax credit
- Wholesale cost of gasoline: \$ 2.70
- Ethanol can't cost more than \$1.78 + tax credit of \$0.51 = \$2.29
- Ethanol producers can't pay more than \$5.25-\$5.50 per bushel of corn and make money
- Probably no more than 4 billion bushels available at that price (food/export competition)

Comparing demand and supply

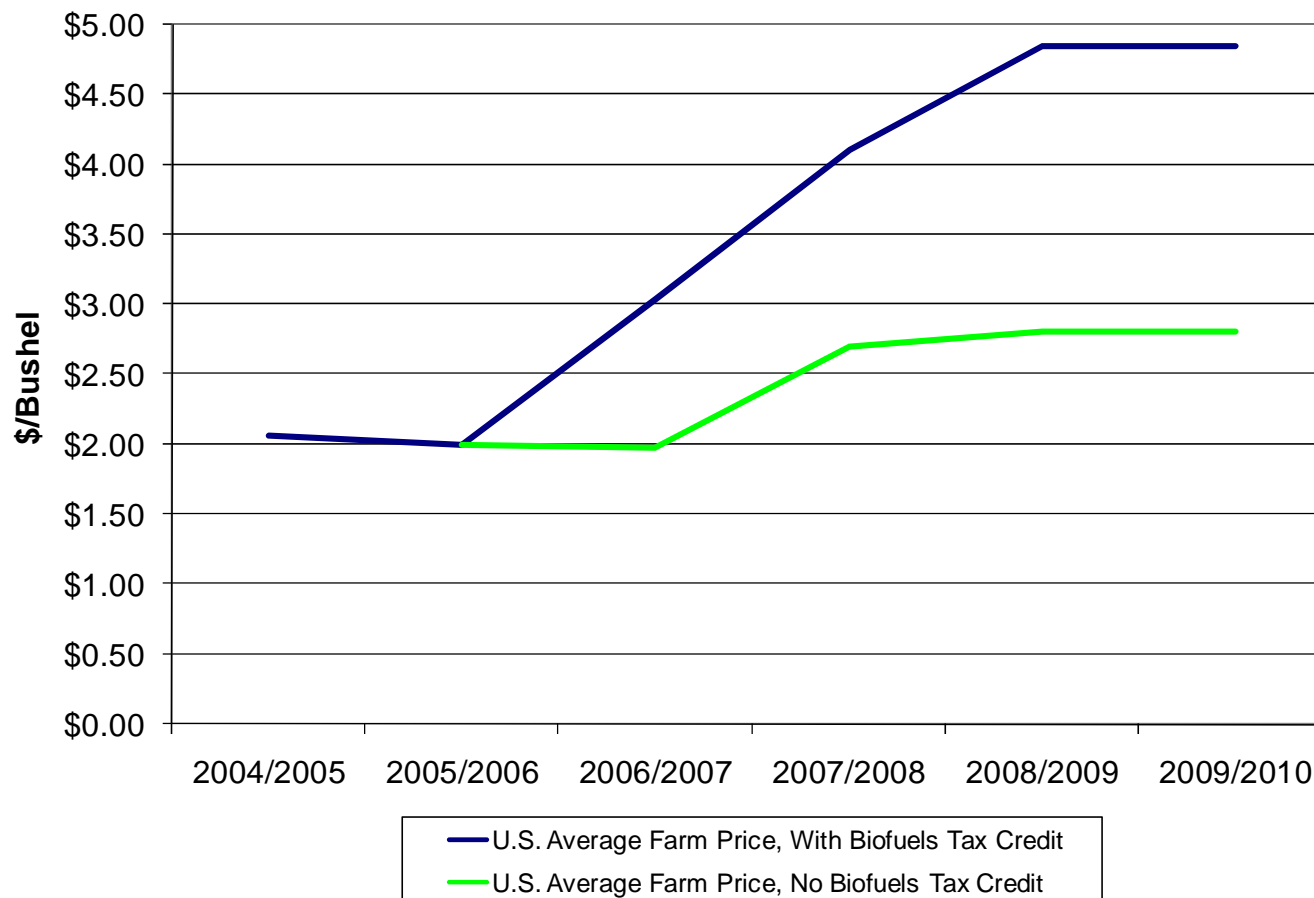
Ethanol Plants	Capacity (billions of gallons per year)	Corn needed (billion bushels)	Corn available at acceptable price
Existing (147)	8.52	3.2-3.5	
Expanding (6) or Under Construction (55)	5.08	1.8-2.0	
Total	13.6	5.0-5.5	4.0

Gap of 1-1.5 billion bushels of corn likely – limiting ethanol production to 75-80% of capacity

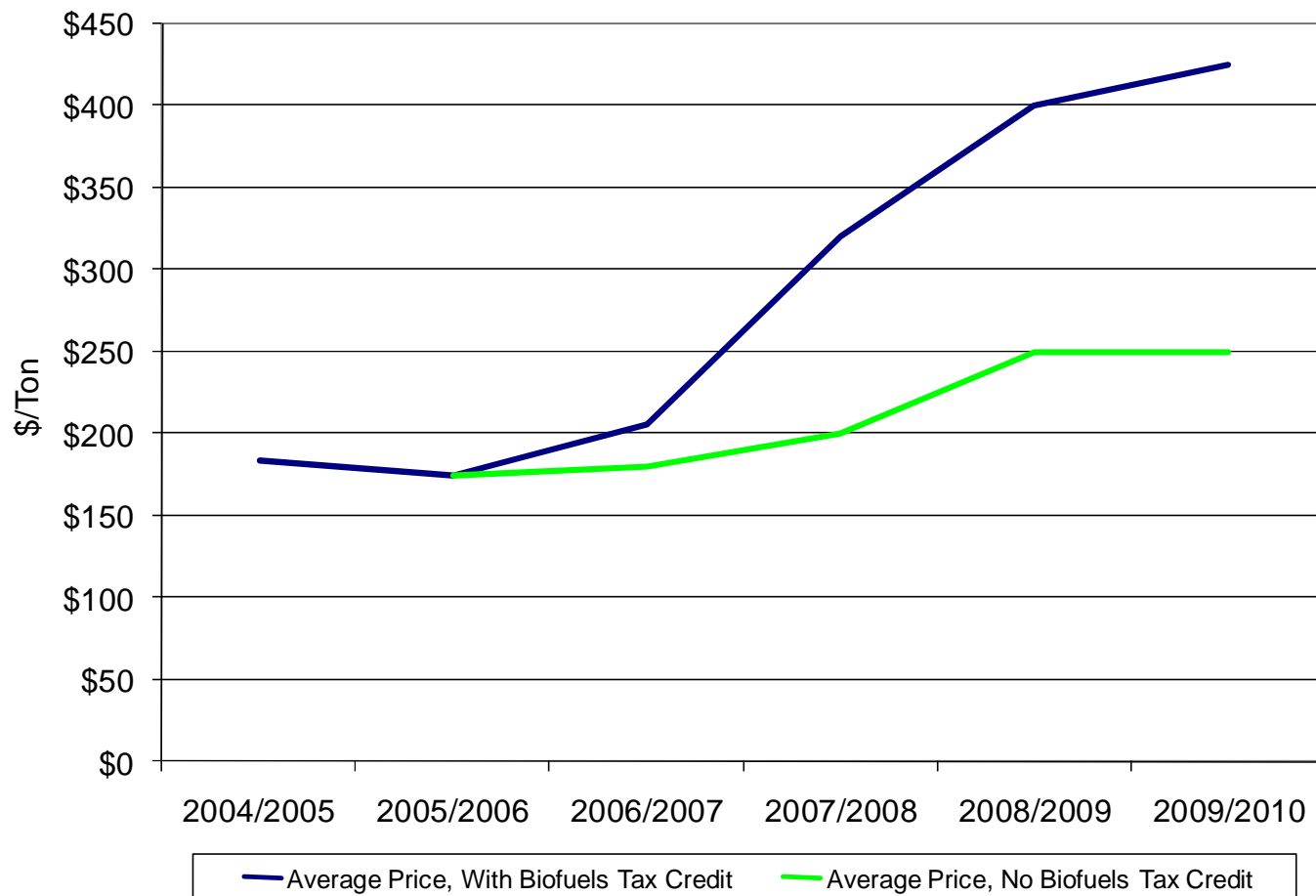
Results past 2007/2008 crop year

- Corn prices move to new, higher plateau
- Soybean meal/oil prices to higher plateau
- Soyoil priced out of biofuel market
 - Based on energy value
 - Some niche market use will remain
- Potential for extreme price volatility
 - Corn crop failure makes RFS effective
 - Prices depend on administrative decisions

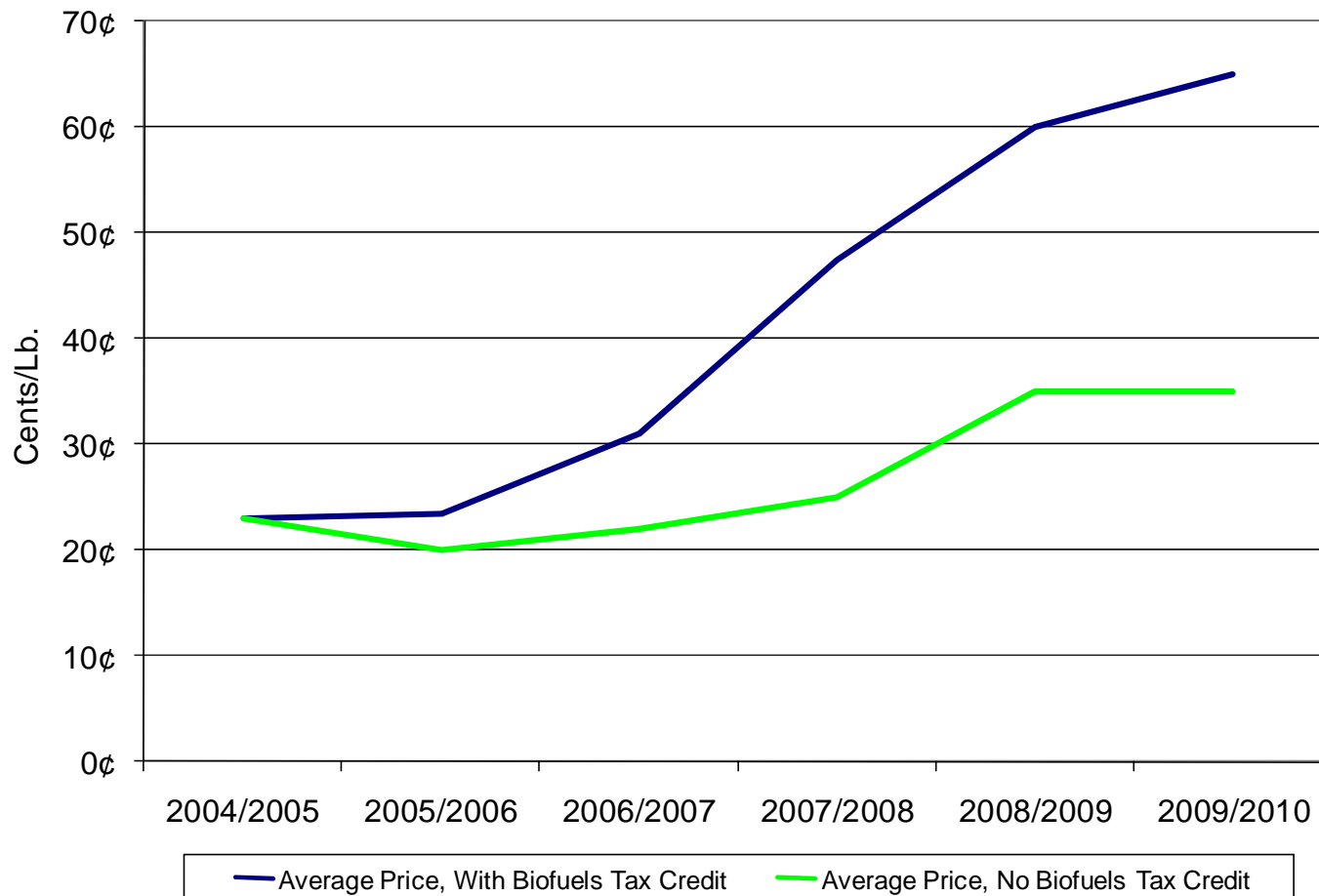
Biofuel policy effect - corn price



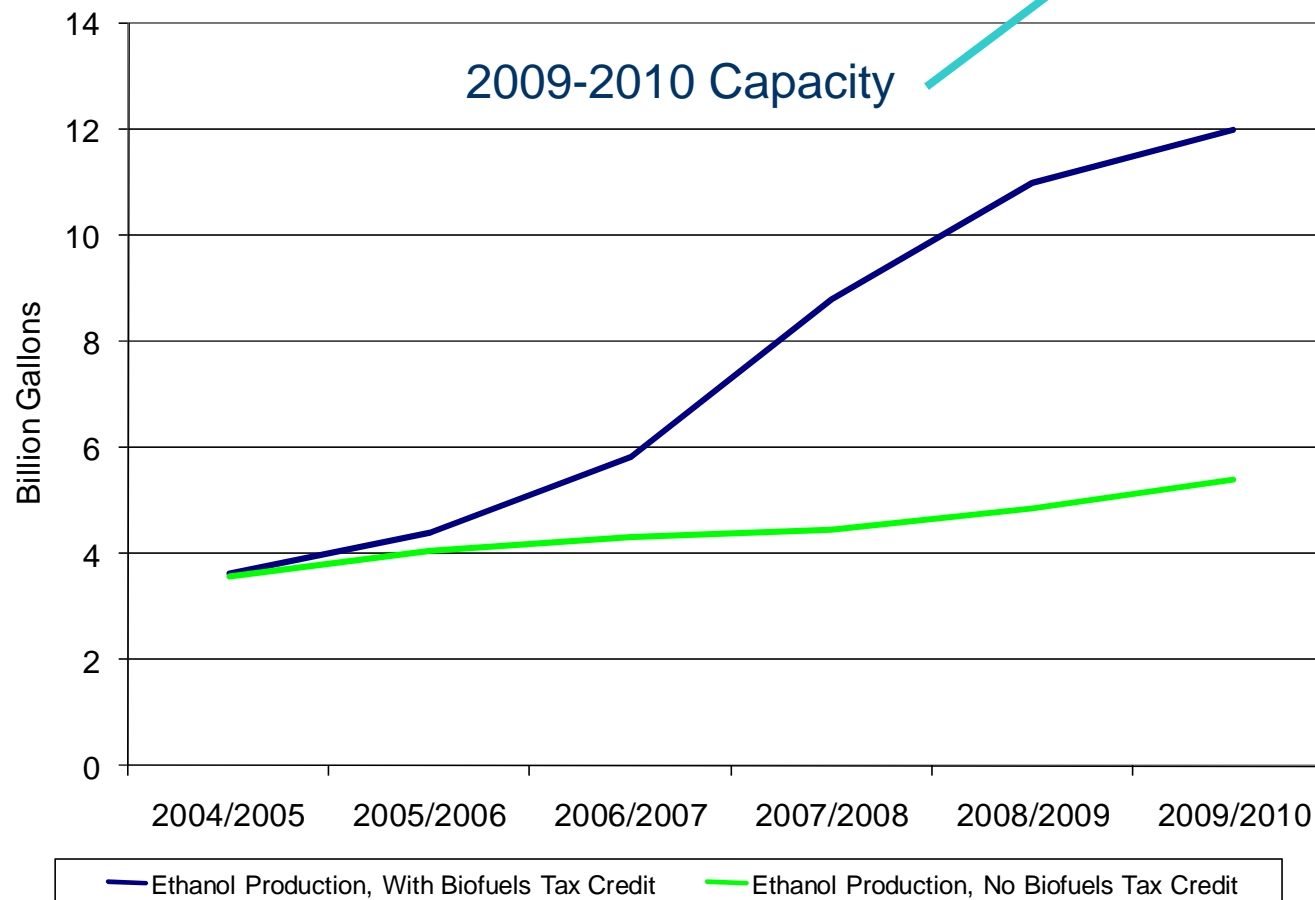
Biofuel policy effect – soymeal price



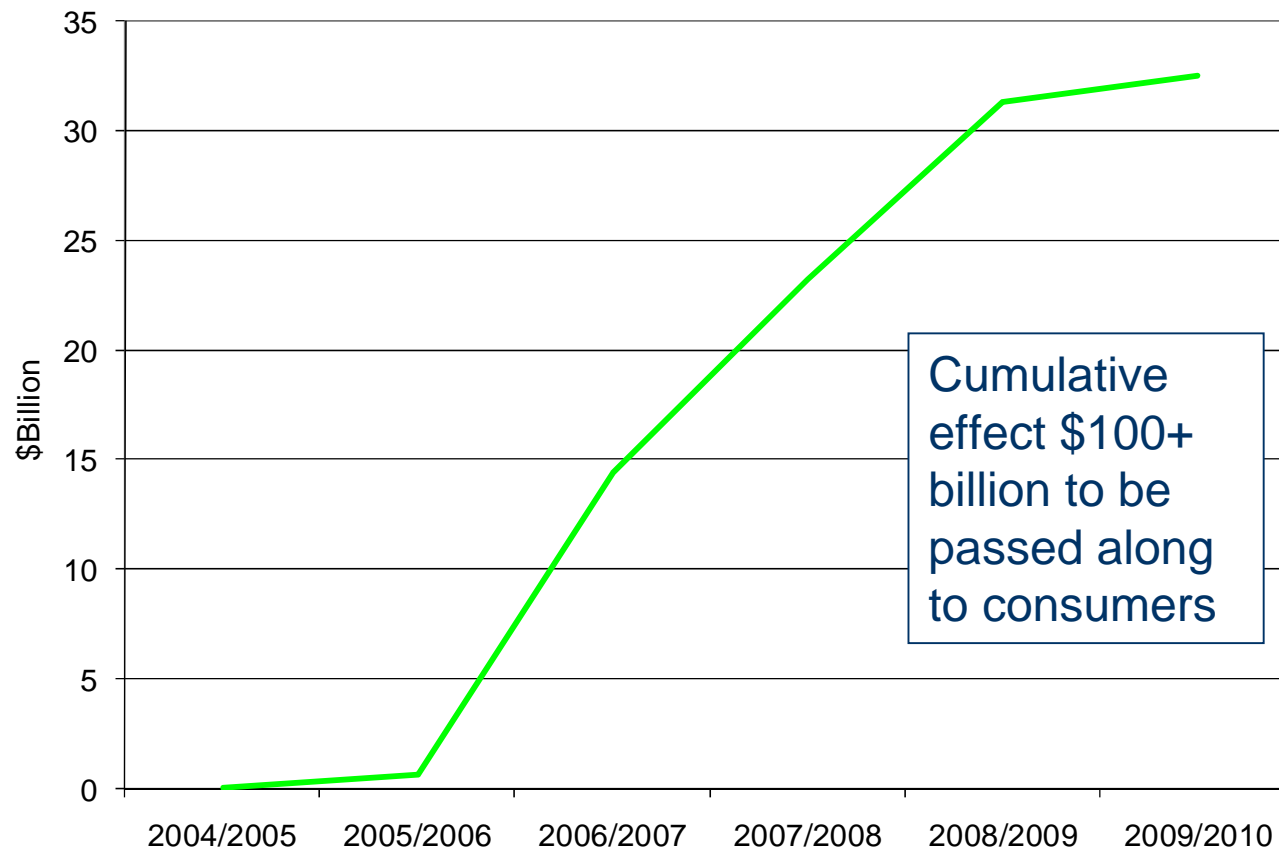
Biofuel policy effect – soyoil price



Biofuel policy effect – ethanol production



Biofuel policy effect – costs to domestic corn and soybean users



Biofuel policy effect – costs of other feed ingredients

Item	2004	Jan. 2008	% Change
Meat and Bone Meal/Ton	\$191.68	\$347.75	81%
Meat Meal/Ton	\$190.63	\$335.39	76%
Sunflower Meal/Ton	\$107.42	\$215.17	100%
Feather Meal/Ton	\$246.86	\$400.87	62%
Yellow Grease/Ton	\$335.70	\$528.40	57%
Rice Millfeed/Ton	\$27.05	\$50.00	85%

68.5% of these increases attributed to biofuels policy

Cost increases, 2007/2008 crop year

(\$ Million)

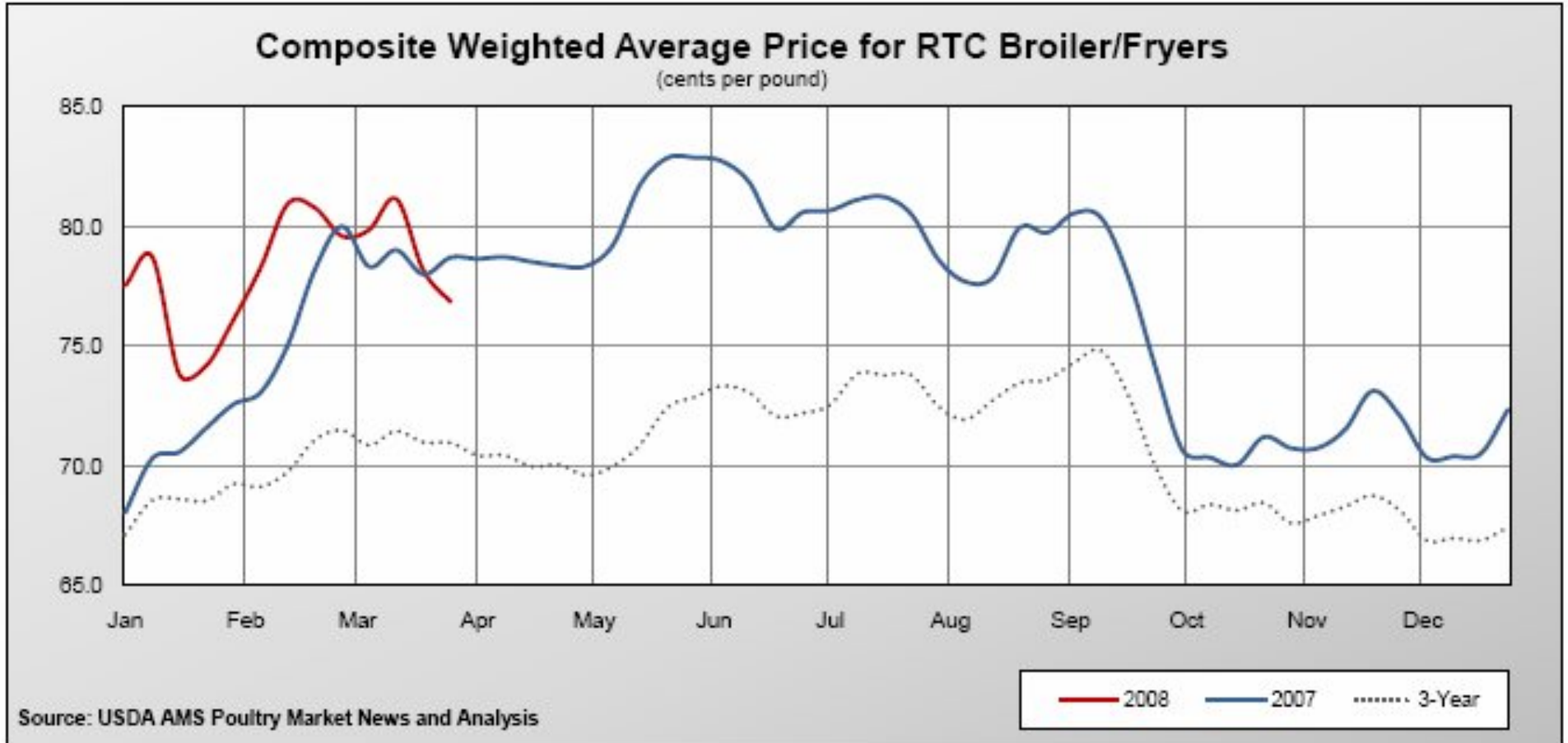
2007/2008						
User	Corn Cost	Soybean Meal Cost	Other Protein Cost	Soybean Oil Cost	Other Fats Cost	Total
Broilers	\$1,327	\$1,813	\$143		\$190	\$3,473
Turkeys	\$341	\$234	\$30		\$41	\$646
Layers	\$765	\$838			\$149	\$1,753
Swine	\$1,859	\$1,060				\$2,919
Fed Cattle	\$1,594		\$647			\$2,241
Dairy - Milk Cows	\$1,977	\$179	\$572			\$2,728
Corn - food & industrial	\$1,918					\$1,918
Soybean Oil - Food				\$3,622		\$3,622
Ethanol	\$4,477					\$4,477
Biodiesel				\$675		\$675
<i>Total of Above</i>	\$14,258	\$4,125	\$1,392	\$4,297	\$380	\$24,452

Cost increases, 2008/2009 crop year

(\$ Million)

2008/2009						
User	Corn Cost	Soybean Meal Cost	Other Protein Cost	Soybean Oil Cost	Other Fats Cost	Total
Broilers	\$1,897	\$2,154	\$266		\$280	\$4,597
Turkeys	\$487	\$272	\$57		\$60	\$876
Layers	\$1,116	\$1,008			\$280	\$2,403
Swine	\$2,440	\$1,193				\$3,633
Fed Cattle	\$2,092		\$815			\$2,907
Dairy - Milk Cows	\$2,852	\$222	\$791			\$3,865
Corn - food & industrial	\$2,765					\$2,765
Soybean Oil - Food				\$3,625		\$3,625
Ethanol	\$8,163					\$8,163
Biodiesel				\$250		\$250
<i>Total of Above</i>	\$21,813	\$4,848	\$1,929	\$3,875	\$619	\$33,084

Wholesale broiler prices up 10-15%



Wholesale turkey prices up 25%

Eastern Region 8-16 lbs. Hen Turkey - Weekly Average Prices
(cents per pound)

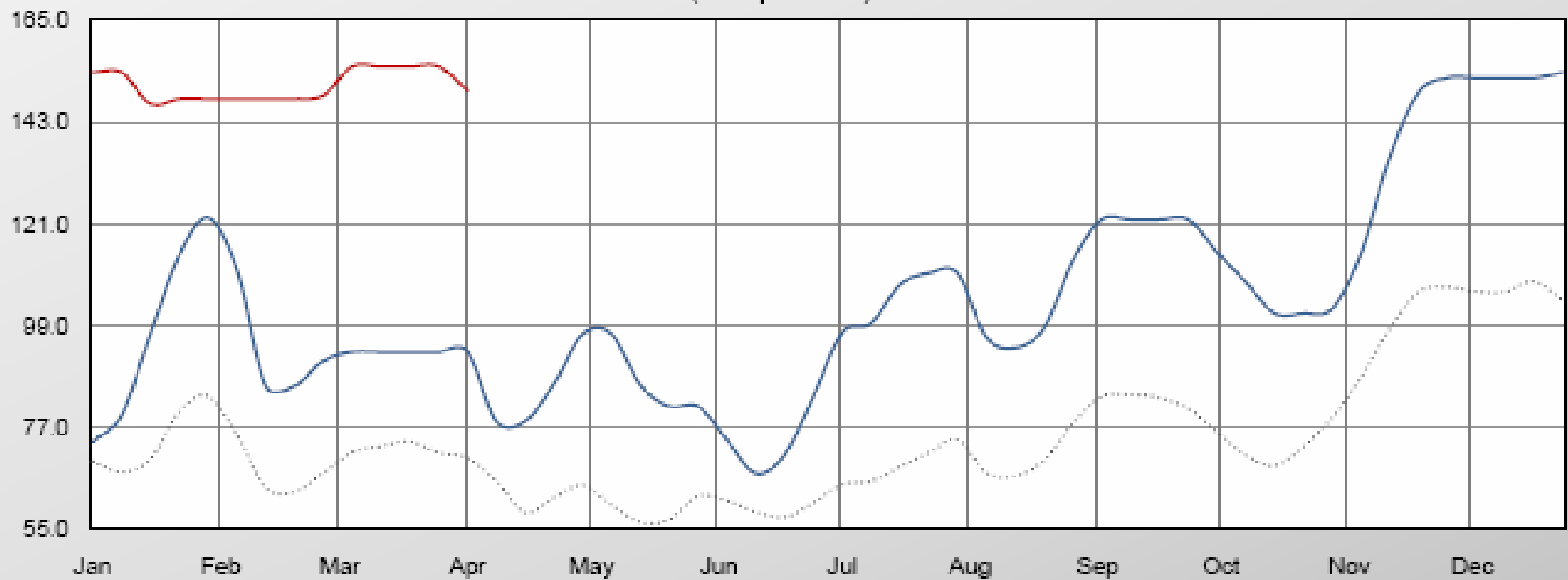


Source: USDA AMS Poultry Market News and Analysis

— 2008 — 2007 3-Year

Wholesale egg prices up 100%

Combined Regional Large Egg Prices - Weekly Average Prices
(cents per dozen)



Source: USDA AMS Poultry Market News and Analysis

— 2008 — 2007 3-Year

Cost increases by sector

Category	Added Cost, 2007/2008	Added Cost, 2008/2009	Cost Basis
Broilers	\$0.39	\$0.53	(Per Head Sold)
Turkeys	\$2.46	\$3.40	(Per Head Sold)
Layers	\$0.23	\$0.32	(Per Dozen Eggs)
Market Hogs	\$27.98	\$38.69	(Per Head Sold)
Fed Cattle	\$81.51	\$117.50	(Per Head Sold)
Dairy Cows in Milk	\$0.12	\$0.17	(Per Gallon of Milk)
Other Food and Industrial Uses	\$35.45	\$48.85	(Per Person Per Year)

Estimated changes 2008/2009 vs. 2007/2008

Item	<i>% Change</i>
Corn production	-3%
Corn supply	-2%
Ethanol corn use	25%
Corn feed use	-4%
Corn price	18%
Soybean production	10%
Soybean supply	-10%
Soybean meal feed use	-7%
Soybean meal price	25%
Broiler production	-2%
Turkey production	-2%
Egg production	-1%
Pork production	-10%
Fed beef production	-5%
Milk production	-1%

What is true cost of ethanol?

- Move costs imposed on others back to ethanol
- Take out increased cost of gasoline to replace ethanol not produced if no tax credit
- Correct for energy content at 66% of gasoline
- Net result is \$4.30-\$4.46/gallon, wholesale, for gasoline replaced, over \$5 retail
- 80-90% higher cost than gasoline

Biofuels policy and energy security

- Biofuel potential only 10-15% of oil imports
- Biofuels reduce incentives to build oil refinery capacity:
 - In short crop year biofuels capacity reduced
 - Will require increased imports of refined fuels
 - Energy costs will go up
- Arguably, biofuels policy reduces reliability of energy supplies

Biofuels policy - economic growth

- Added costs imposed on other sectors
- Reduces food production potential
- Job losses starting to show up
- Extra costs
 - Act as drag on overall growth
 - Increased food price pressures
- May also reduce food export volume
- Result is a net loss of **real GDP**

Biofuels policy - is it sound?

- Criteria: Efficiency and Equity
- Efficiency
 - Raises cost to other sectors
 - Raises real cost of fuels
- Equity
 - Acts as a regressive tax on food and fuel
 - Increased global food costs
 - May increase global hunger and poverty rates
 - Benefits go to top 1% of U.S. economic strata

Conclusions

- Biofuels policy HAS increased biofuel production
- However, at a high cost
 - Feed ingredient prices up 60-100%, or more
 - Total cost increases \$25-33 billion/year
 - Total retail cost of gasoline replaced over \$5/gallon
 - Regressive effects on food and fuel prices
- For little real gain
 - Energy security is lower
 - Little net gain in energy supply

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