
Bruce Babcock
Iowa State University
Importance of Ethanol to Agricultural Profitability

• 8.5 billion gallons of additional corn ethanol production since 2006
  – Three billion bushels of additional corn consumption
  – 2.25 billion bushels of consumption net of DDGS
  – Diversion of 15 to 20 million acres of productive crop ground from traditional uses
Importance of RFS Mandate for Conventional Ethanol

![Bar chart showing billion gallons of conventional ethanol production from 2012 to 2015. The production increased from 2012 to 2015.]

- 2012: 12.0 billion gallons
- 2013: 13.0 billion gallons
- 2014: 14.0 billion gallons
- 2015: 15.0 billion gallons

The chart indicates a steady increase in the production of conventional ethanol from 2012 to 2015.
Understanding RIN Markets

• RINs are used to verify compliance with biofuel mandates
• Supply of RINS = Biofuel production + stored RINS
• Demand for RINs determined by mandates
• If supply < demand: RIN price rises
• If demand < supply: RIN price falls
Current Situation

• Without mandate, supply of RINs equal to about 10% of gasoline supply (E10)

• Problem is that demand for RINs in 2014 and 2015 exceed this supply

• Price of RINs will rise until supply = demand
Impact of $0.90 per gallon RIN price

• Current ethanol price = $2.40 per gallon

• Subtract $0.90 per gallon to get the expected market value of “beyond E10” ethanol: $1.50

• Ethanol is valued at 56% of gasoline

• Makes E85 attractive to owners of FFVs
  – Only way to meet mandate
Supply of Ethanol Given US Corn Yield of 158 bu/ac in Current Crop Year

Given a fixed corn supply, a higher corn price reduces non-ethanol corn consumption making more corn available for ethanol.
Market Demand for Ethanol with $2.70 per Gallon Gasoline

Incremental Value of Octane

E10 Blend Wall

E85 Discount Needed
Corn Market Equilibrium with $2.70 Gasoline, 158 bu Yield; No Mandate

$4.75/bu
13.2 billion gallons
But Mandate is 14.2 Billion Gallons in the Next Marketing Year

- $5.00 corn; $2.22 plant price ethanol
- $3.65 corn; 1.70 ethanol
But Mandate is 14.2 Billion Gallons in the Next Marketing Year
But Mandate is 14.2 Billion Gallons in the Next Marketing Year

$0.52 RIN price
Impact of Mandates on Corn Prices

• Mandate increases corn prices by about $0.25 per bushel

• Impact of policy on 2013/14 profitability modest

• Assumes that oil companies are rationale when it comes to buying ethanol
What About 2014/15?

• Carryover stocks from 2013/14 increase to 2 billion bushels: 15% stocks to use ratio

• Suppose we hold acreage constant in 2014 and have trend-line yields (162 bu/ac)
  – Total supply = 16.5 billion bushels

• What is the impact of the mandate?
Market Equilibrium in 2014/15 with No Mandate
15 Billion Gallon Mandate Has a Modest Impact on Corn Prices
Outlook Summary: 1

• If weather conditions are favorable
  – Price of corn will drop in 2013/14 and drop further in 2014/15 with or without ethanol mandates
  – Return to sub $4.00 corn possible in 2014/15
  – Mandates do little to support corn prices

• Without a 2014 drop in acreage, stocks could grow to 2.5 billion bushels
Outlook Summary: 2

• If weather conditions are unfavorable
  – Corn prices will be higher
  – Mandates will boost corn prices by more than under favorable weather
  – But is this what agriculture really wants?
Outlook Summary: 3

- If gasoline prices drop precipitously then mandates have a larger impact
  - But if refineries still use ethanol in a 10% blend impact of mandate still modest
Last Comments

• No reason why US corn ethanol industry could not emphasize exports
  – If corn is inexpensive, why not export?
  – Canada, Mexico, EU (perhaps) China, Asia, etc

• With inexpensive corn, food vs. fuel debate has no legs.

• Will gasoline prices stay high to support exports?