Bio-Fuels: Opportunities and Challenges

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Bio-fuels Background

• Interest in bio-fuels has grown tremendously worldwide, but especially in the US in recent years.
• In the developed world, interest often focuses on reduced dependence on imported oil, and environmental benefits (controversial).
• More recently, bio-fuels production in the US has been promoted as a rural development activity.
Specific Objectives

- Reduce reliance on foreign oil.
  - Crude oil futures reached an all time high this year

- Reduce noxious emissions

- Increase demand for agricultural commodities

- Promote rural economic development

Current Policy Programs
Federal and State

- Federal Programs:
  - Environmental Protection Agency
  - Department of Agriculture
    - Commodity Credit Corporation
    - Rural Business cooperative service
  - Department of Energy
  - Internal Revenue Service

- State Policies – vary by state
  - Production subsidies
  - Use mandates
Policy Shift

- Current policies appear to be shifting from production incentives and towards consumption mandates. The result is a policy landscape that is focused on both the supply and the demand side of bio-fuels markets.

Demand Focused Policy - Federal

- Energy Policy Act of 2005:
  - Increase ethanol consumption to 7.5 billion gallons by 2012.
  - We currently produce about 4.2 billion gallons (94 plants in 20 states)
  - 29 plants under construction and 9 in major expansion. Increase production capacity by 1.5 billion gallons. If 90 percent uses corn as a feedstock – 500 million additional bushels of corn.
Demand Focused Policy - State

• Use mandates for ethanol:
  − 4 states currently have mandates on ethanol blends
  − Several other states have legislation pending or under consideration

Effective Policy

• Reduce reliance on foreign oil.

• Reduce noxious emissions

• Increase demand for agricultural commodities

• Promote rural economic development
Energy Independence

• If half of the corn grown in the US was used in ethanol production, current technology would yield about 15 billion gallons of ethanol per year. The US uses about 360 million gallons of gasoline per day.

• The US produces about 23.7 billion pounds of vegetable oil, and about 11.6 billion pounds of animal fat each year. This translates into 4.64 billion gallons of bio-diesel, or 15 percent of current US consumption.

Reduce Noxious Emissions

Source: EPA
Promote Rural Economic Development
10 MGY bio-diesel plant

- Increase state income $2.1 million
- Increase industrial sales $4 million
- Produce 37 total jobs
- Increase state and local tax revenue $366K
- Increase sales tax revenue $116K
- Increase property tax $115K

Demand for Agricultural Commodities
Corn
- Growth in ethanol demand has increased the commercial use of corn to 27 percent of total consumption (18 percent 8 years ago).
- Price impacts have been positive:
  - About 12 cents per bushel on average in production regions (McNew and Griffith 2005)
  - (low of <5, high >19) BUT NOT ENOUGH GIVEN PRODUCTION TO PUT US CONSISTENTLY ABOVE THE LOAN RATES
Soybeans

- Soyoil is currently 24 to 26 cents per pound. In a 10 MGY bio-diesel plant, this would result in a production cost of about $2.39 per gallon.
- The key to making this a permanent part of the fuel supply is maintaining high petroleum diesel prices, and/or public policy that encourages consumption.
Conclusions

- Positive public policy is key to growth in the US bio-fuels industry.
- Professional, private investment has been limited to date based on perceptions of market returns and public policy risks.
- Based on current technology, these are commodity markets. Commodity markets historically produce low rates of return over the long-run.
Conclusions Cont.

- Regardless of public policy focused on bio-fuels, the US will continue to be dependent on oil imports in the coming decades. This problem cannot be addressed by supply substitution alone.
- Attracting substantial private risk capital to commodity market investments will require a stable public policy environment.
- Public policy focused on bio-fuels will not be a short-term substitute for commodity programs directed at enhancing farm incomes.