“International Trade and Ethanol”

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Presentation prepared for Economics Update “The Future of Renewable Energy in Ohio” Columbus, OH, March 1, 2007
Some contrasting views......

- “If our refineries are going to be forced to use ethanol...they should not be constrained by artificial protectionist tariffs” (Sen. Dianne Feinstein, May 5 2006)

- “Providing more duty-free treatment for ethanol won’t increase supplies or reduce prices at the pump. It’s a solution in search of a problem” (Sen. Chuck Grassley, May 5 2006)

- “Is the fact that the U.S. has imposed a 54-cents-a-gallon tariff to prevent Americans from importing sugar ethanol from Brazil just stupid or really stupid?” (Thomas Friedman, New York Times, September 20, 2006)

- “There is a place for ethanol in the world’s energy future – but that place is in the tropics” (Paul Krugman, New York Times, January 29, 2007)
World production of ethanol

Production of Ethanol: 1983-2005

Source: Earth Policy Institute, 2005
# World production of ethanol

## Leading ethanol producing countries, 2004-2005

<table>
<thead>
<tr>
<th>Country</th>
<th>2004 (mil. gal. per year)</th>
<th>2005 (mil. gal. per year)</th>
<th>Country</th>
<th>2004 (mil. gal. per year)</th>
<th>2005 (mil. gal. per year)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brazil</td>
<td>3,989</td>
<td>4,227</td>
<td>Brazil</td>
<td>4,227</td>
<td>35.8</td>
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<tr>
<td>United States</td>
<td>3,400</td>
<td>3,904</td>
<td>United States</td>
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<td>China</td>
<td>964</td>
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<td>964</td>
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<tr>
<td>India</td>
<td>462</td>
<td>449</td>
<td>India</td>
<td>462</td>
<td>3.8</td>
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<td>France</td>
<td>219</td>
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<td>Russia</td>
<td>198</td>
<td>198</td>
<td>Russia</td>
<td>198</td>
<td>1.7</td>
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<tr>
<td>South Africa</td>
<td>110</td>
<td>114</td>
<td>Germany</td>
<td>110</td>
<td>1</td>
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<td>United Kingdom</td>
<td>106</td>
<td>103</td>
<td>South Africa</td>
<td>106</td>
<td>0.9</td>
</tr>
<tr>
<td>Saudi Arabia</td>
<td>79</td>
<td>93</td>
<td>Spain</td>
<td>79</td>
<td>0.8</td>
</tr>
<tr>
<td>Spain</td>
<td>79</td>
<td>92</td>
<td>United Kingdom</td>
<td>79</td>
<td>0.7</td>
</tr>
<tr>
<td>Others</td>
<td>1,029</td>
<td>1,366</td>
<td>Others</td>
<td>1,029</td>
<td>11.6</td>
</tr>
<tr>
<td>Total</td>
<td>10,770</td>
<td>11,790</td>
<td>Total</td>
<td>10,770</td>
<td>100</td>
</tr>
</tbody>
</table>


March 1, 2007
Production in U.S. vs. Brazil

- Corn vs. sugarcane feedstock
- Costs per gallon of fuel*:
  - $1.09/gallon from corn
  - $0.83/gallon from sugarcane
- U.S. delivered costs per gallon†:
  - $2.47/gallon
  - $2.12/gallon (c.i.f)

* von Lampe (2006), Shapouri et al. (2006)  † Based on October 2005 prices

March 1, 2007
## U.S. ethanol consumption

Estimated U.S. Consumption of Fuel Ethanol, Gasoline, and Diesel

(million gasoline-equivalent gallons)

<table>
<thead>
<tr>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>E85&lt;sup&gt;a&lt;/sup&gt;</td>
<td>1</td>
<td>2</td>
<td>7</td>
<td>10</td>
<td>22</td>
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<tr>
<td>E10&lt;sup&gt;b&lt;/sup&gt;</td>
<td>660</td>
<td>890</td>
<td>1,110</td>
<td>1,120</td>
<td>2,052&lt;sup&gt;c&lt;/sup&gt;</td>
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<tr>
<td>Gasoline</td>
<td>117,800</td>
<td>122,850</td>
<td>125,720</td>
<td>130,740</td>
<td>136,370</td>
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<tr>
<td>Diesel</td>
<td>30,100</td>
<td>33,670</td>
<td>36,990</td>
<td>38,310</td>
<td>40,740</td>
</tr>
</tbody>
</table>

<sup>a</sup> Blend of 85% ethanol with 10% gasoline  
<sup>b</sup> 10% ethanol blended with gasoline  
<sup>c</sup> 3.4 billion gallons of ethanol consumed in 2004, but equivalent gallons lower due to lower energy content

Source: Yacobucci, 2006

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Factors impacting U.S. ethanol demand

- Renewable Fuel Standard (RFS) in 2005 Energy Policy Act, requiring fuel production to include minimum amount of renewable fuel – 7.5 billion gallons by 2012
- State bans on use of MTBE as an additive
- Relaxation of federal oxygenate requirements and no MTBE liability protection
- Rise in gasoline prices has increased use of ethanol as a fuel extender (Eidman, 2006)
- Tax credit of 51 cents/gallon of ethanol used in blending
U.S. ethanol prices

U.S. Ethanol, Gasoline and Corn Prices

Source: Tokgoz and Elobeid, 2006
To offset U.S. tax incentive, most ethanol imports subject to 54 cent/gallon duty

Caribbean Basin Economic Recovery Act (CBERA) of 1983 established rules for ethanol imports:
- duty-free if 50% CBERA feedstock
- quota on ethanol from non-CBERA feedstock that is duty-free – 7% of U.S. market

Brazil able to export to U.S. under CBERA rules, e.g., via Jamaica and Costa Rica
U.S. trade in ethanol

U.S. Ethanol Imports and Exports

Source: Tokgoz and Elobeid, 2006
Freeing up U.S. ethanol trade

- Volatility in domestic ethanol prices, and occasional price spikes have led to demands for removal of U.S. import duties.
- What might be economic effects of removing ethanol import tariff and tax exemption to blenders?
- Based on 2005 data, recent study at CARD, Iowa State has simulated effects (Elobeid and Tockgoz, 2006)
World Ethanol Market

Ethanol price

Brazilian supply + t

Brazilian supply

U.S. demand

U.S. demand - s

P₁ + t

P₂

P₃

P₁

t = tariff

s = subsidy

E₁

E₂

E₃

Ethanol imports

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Effects of free trade in ethanol

U.S. Net Ethanol Imports and Domestic Ethanol Price: 2005-15

- Baseline Net Imports
- Scenario 1 Net Imports
- Scenario 2 Net Imports
- Baseline Domestic Ethanol Price
- Scenario 1 Domestic Ethanol Price
- Scenario 2 Domestic Ethanol Price

Source: Elobeid and Tokgoz, 2006

Scenario 1: No U.S. tariff
Scenario 2: No U.S. tariff/subsidy

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Effects of free trade in ethanol

Brazil Net Ethanol Exports and World Ethanol Price: 2005-15

Source: Elobeid and Tokgoz, 2006

Scenario 1: No U.S. tariff
Scenario 2: No U.S. tariff/subsidy

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Observations.....

- Freeing up trade in ethanol would allow Brazil to exploit its comparative advantage
- If ethanol is mostly a complement to gasoline, why tax cheap imports?
- Taxing gasoline would seem a first-best policy for reducing U.S. dependence on foreign-oil
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