Proposal for Biobased Industry Center Grants Program

Analysis of RFS and the E10 blend wall: estimating the demand for E85 and its effect on the price of RIN

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Research priority

• Investigate E85 as a pathway to meet the RFS despite the E10 blending wall.
• Predict the penetration of E85 and calculate the price of RIN under the regulated RFS volumes.
• This will be done in three steps.
Supply and Demand for Ethanol

D

S

Price per gallon

P*

Q*

Q^M

Gallons per year

RIN price
Supply and Demand for Ethanol

Price per gallon

Gallons per year

\( Q^* \)

\( P^* \)

RIN price

RIN price

\( Q^M \)
Step 3

• Use existing model of biofuel, like the one at CARD, to predict RIN price at different RFS volumes given the penetration of E85 blend.
Supply and Demand for Ethanol

Price per gallon

Gallons per year

$D_0$, $D_1$, $S$

$Q^*$, $Q^M$

RIN price
Step 2

- Predict the penetration of E85 in the United States based on data on the fleet of flex fuel vehicles (FFV) in the United States and on consumer willingness to pay for ethanol relative to gasoline.
Supply and Demand for Ethanol

D₀, D₁, S, Q⁺, Q⁻, P⁺, RIN price

Price per gallon

Gallons per year

Q⁺, Q⁻
Method

• Simulation model of fuel demand.
• We will focus on metropolitan areas:
  – Larger fleet of FFV in those areas;
  – More potential for the distribution of E85.
• We will calibrate our model based on consumer preference for types of fuel.
Step 1

- Estimate the willingness of United States consumers to switch from traditional fuel to E85 based on observations from Brazil adoption of high ethanol content fuel.
Step 1

- Salvo and Huse (2012) investigate a similar question using a survey.
- Our approach will account for the characteristics of the car fleet in Brazil and specificities of the Brazilian market.
  - Allows to apply results from the Brazilian market to the US market.
- The data employed in this study will be monthly aggregate data of Brazilian consumption of hydrous ethanol, anhydrous ethanol, and gasoline.
<table>
<thead>
<tr>
<th>Key Tasks</th>
<th>Summer 2012</th>
<th>Fall 2012</th>
<th>Spring 2013</th>
<th>Summer 2013</th>
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</thead>
<tbody>
<tr>
<td>1. Review of economic literature</td>
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<td>2. Estimate Brazil demand for ethanol</td>
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<td>3. Predict demand in the United States for E85</td>
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<td>4. Predict the price of RIN</td>
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<td>5. Preparation of manuscript and other deliverables</td>
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Dissemination plan

• Working papers (BIC and department of economics).
• Professional meetings (AAEA).
• Non-technical summaries in non-academic journals.
• Agricultural and environmental economic journals.
Conclusion

• This project offers new understanding of the demand for ethanol.
• Fits as a building block of a model of ethanol consumption in the United States.
• Will yield better estimates of ethanol and RIN prices.
## Budget summary

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<tr>
<th>Description</th>
<th>Amount</th>
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<tbody>
<tr>
<td>Salary Pouliot (including fringe and benefits)</td>
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<td>Salary Graduate Student (including fringe and benefits)</td>
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<td>Travel</td>
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<td><strong>Total</strong></td>
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