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Theme Overview: Economic and Policy Analysis of Advanced Biofuels

Gal Hochman

JEL Classifications: Q2, Q4, Q13, Q42, Q48

Keywords: Advanced Biofuels, Biomass, Cellulosic Ethanol, Renewable Fuel Standards

The existing federal biofuel policy—also known as the renewable fuels standard (RFS) as defined in the Energy Independence and Security Act of 2007—is leading to a very intense political debate, whose outcomes and decisions today affect the future development of advanced biofuels. In an effort to better understand the sources of the intense debate and the implications of existing policy decisions, the current theme attempts to explain various benefits and costs associated with the expansion of advanced biofuels and their co-products.

Zilberman and his colleagues begin the discussion, arguing that biofuel policy is an outcome of political economic processes whereby macro-level aggregate considerations, as well as micro-level considerations, lead to a fuel policy whose major impacts are improved balance of trade, increased farm-level income, and higher commodity prices.

Miranowski then discusses the merits of technology forcing and the commercialization of advanced biofuels. He examines the associated costs and benefits of forcing technological change, while reviewing supply of cellulosic and CO₂ reduction costs at different levels of cellulosic ethanol production under the RFS as announced by the Environmental Protection Agency in 2013.

Miao and Madhu examine the risks associated with the production of two promising advanced biofuel crops: miscanthus and switchgrass. The authors compare the two crops with those of conventional row crops such as corn and soybeans, and quantify the relative riskiness of biomass production.

Tyner and Petter identify aviation as a potentially lucrative market for advanced biofuels. The authors present

Articles in this Theme:

Political Economy of Biofuel

Technology Forcing and Associated Costs and Benefits of Cellulosic Ethanol

Are Bioenergy Crops Riskier than Corn? Implications for Biomass Price

The Potential for Aviation Biofuels—Technical, Economic, and Policy Analysis

Biofuels at a Crossroads

a comprehensive economic analysis of the conversion of corn stover to jet fuel using fast pyrolysis technology, and argue that risk is the primary factor currently inhibiting investment in aviation biofuels. The authors suggest policy options that might help attenuate the private sector risk and jump-start the industry.

Hochman ends this theme with an attempt to better understand the physical and economic hurdles that currently prevent commercialization of advanced biofuels. He concludes that energy production is but one of several profitable uses for biomass, and that the ultimate goal of any bioeconomy should be to make optimal use of its biomass feedstock.

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