

# Teaching Tips

from the  
**Federal Reserve Bank of Kansas City**

Can Ethanol Power the Rural Economy?  
Main Street Economist • January 2007

## Reading the Article with Students

The January 2007 issue of the *Main Street Economist* focuses on the growth and success of ethanol in many rural communities across the nation. But while the industry has had great success, its profits can swing wildly because of forces beyond its control. The article examines what profits may look like in the future and the risks for the industry.

Teachers can use this five-page article in the classroom for a reading and discussion activity across a variety of disciplines. The article could be read as homework or in class; it can be paired with a class-directed discussion or written questions completed in advance. The article is available online at [http://kansascityfed.org/RegionalAffairs/mainstreet/MSE\\_0107.pdf](http://kansascityfed.org/RegionalAffairs/mainstreet/MSE_0107.pdf).

## Discussion Questions and Extension Activities by Subject Area

### Current Events

1. Search online for recent newspaper articles related to ethanol. What angle do they review in the article (several recent articles have looked at corn prices, water impacts, profit potential, and risks)? Summarize the article for the class.
2. How many new ethanol plants are being planned or expanded in your state? What impacts, both positive and negative, might a new or expanded plant have on a community?
3. President Bush's 2007 State of the Union Address called for reducing U.S. gasoline usage by 20 percent in the next ten years. Part of this would be accomplished by increasing the supply of renewable and alternative fuels by setting a mandatory fuels standard to require 35 billion gallons of renewable and alternative fuels by 2017. What impact might this have on ethanol produced from corn, as well as potential new sources of ethanol from other biomass feedstock?

### Social Studies and Economics

1. What role does government play in the production of ethanol? How do government acts such as the Clean Air Act and Energy Policy Act of 2005 impact how much ethanol is produced?
2. Brazil is the largest producer of ethanol in the world. The country uses sugar cane for ethanol production; its government places high taxes on gasoline and provides subsidies for ethanol production to reduce the country's dependence on foreign oil. Should the United States consider this type of approach? Review the costs and benefits of this scenario and propose an approach for the United States.
3. What types of incentives might encourage ethanol producers in the United States to become more efficient and productive?

## Key Economic Concepts

You can use the article as a way to reinforce key economic concepts. Some of the concepts you'll find include:

**Competition:** Attempts by two or more individuals or organizations to acquire the same goods, services, or productive and financial resources. Consumers compete with other consumers for goods and services. Producers compete with other producers for sales to consumers.

**Cost-benefit analysis:** A technique for deciding whether an action should be taken by comparing its benefits and costs.

**Demand:** The quantity of a good or service that buyers are willing and able to buy at all possible prices during a period of time.

**Incentives:** An incentive is a cost or benefit that motivates a decision or action by consumers, workers, firms or other participants in the economy.

**Price elasticity of demand:** The responsiveness of the quantity demanded of a good or service to changes in its price. The price elasticity of demand is the percentage change in quantity demanded divided by the percentage change in price.

**Productivity:** Measured as the value of output per unit of input.

**Profit:** Income received for entrepreneurial skills and risk taking, calculated by subtracting all of a firm's explicit and implicit costs from its total revenues.

**Resources:** The basic kinds of resources used to produce goods and services: land or natural resources, human resources (including labor and entrepreneurship), and capital resources.

# Discussion Questions and Extension Activities by Subject Area (continued)

## Business Education

1. Identify some of the key risks facing the ethanol industry. What do you believe is the biggest current risk for the industry? Why? How might that risk be dealt with?
2. What will happen to ethanol's profits if corn prices remain high but oil prices remain low?

## Agricultural and Rural Issues

1. In 1999, all of the ethanol plants in the United States under construction were owned by farmers. In 2006, only 10 percent of ethanol plants were farmer-owned. Why has this occurred? What kind of impact, both positive and negative, might this have on a rural community?
2. If there is a greater demand for corn for ethanol production and prices continue to remain high, what impact does this have on the amount farmers plant and produce? What impact does this have on other commodity prices?
3. What impact does dried distiller's grains (DDGs), a byproduct of ethanol, have on the cattle industry? What impact does it have on hog and poultry farmers? If you were a hog or poultry producer, how would you feel about ethanol production?
4. E-85 is a blend of 85 percent ethanol and 15 percent gasoline that can be used in flexible fuel vehicles. Have you seen E-85 gas pumps in your community? Is the use widespread? What could increase the chance of more people using E-85?

## Science

1. What are some of the main types of crops that can be used to make ethanol? Research new and alternative options for ethanol production and provide an opinion on how viable those new options are for future use.
2. Research the basics of ethanol production. How might this process become more efficient? How might new technologies impact current supplies of ethanol made from corn?
3. What is an oxygenate fuel? Why does ethanol absorb water and other impurities?

## Links and Resources on Ethanol

Federal Reserve Bank of Kansas City *Main Street Economist* articles on ethanol:

"Can Ethanol Power the Rural Economy?"

[http://kansascityfed.org/RegionalAffairs/mainstreet/MSE\\_0107.pdf](http://kansascityfed.org/RegionalAffairs/mainstreet/MSE_0107.pdf)

"The Rise of Ethanol in Rural America"

[http://kansascityfed.org/RegionalAffairs/mainstreet/MSE\\_0302.pdf](http://kansascityfed.org/RegionalAffairs/mainstreet/MSE_0302.pdf)

National Renewable Energy Lab - <http://www.nrel.gov/>

Renewable Fuels Association - <http://www.ethanolrfa.org/>

## Key Economic Concepts (continued)

**Risk:** The chance of losing money. Risk describes a situation in which the outcome is uncertain and a range of results, potentially both good and bad, is possible.

**Role of government:** Government activity in establishing a framework or rules of the game in economic life.

**Supply:** The amount of a good or service that producers are willing and able to offer for sale at each possible price during a given period of time.

**Trade-off:** The giving up of one benefit or advantage in order to gain another regarded as more favorable.

For more economic concepts, definitions and lessons, check out Virtual Economics 3.0 from the National Council on Economic Education (online at [www.ncee.net](http://www.ncee.net)).