

US Ethanol Policy

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Abstract

With oil prices at an all-time high, alternative fuels are once again receiving considerable attention. One alternative, ethanol has been fueling Brazil since the 1980s and has recently become a cornerstone of United States energy policy as well. Our goal is to perform a thorough analysis and comparison of each country's ethanol policy and make policy recommendations for the United States. Our research leads us to the conclusion that ethanol in the United States is not currently feasible on a large scale. However, new cellulosic ethanol technology may give ethanol a future.

Economics

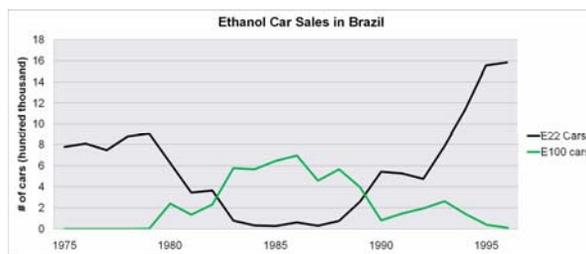
Large scale ethanol use in the US can be very beneficial to the country's economy by increasing jobs, increasing food markets, and generating tax revenues. For instance the fastest growing economy in the US is Iowa mainly because of the jobs and money being generated by its many ethanol plants. On the negative side, most of the US besides the corn belt states are not close to the corn which is the primary source of ethanol in the US. Cellulosic ethanol production can help alleviate this problem because most of US states will be able grow crops that can be converted to ethanol and will thus be able to construct their own ethanol plants.



Background

Brazil's Ethanol History

Brazil began their ethanol program in 1975 due to the oil crisis. At that time, the government controlled Petrobras, allowing the state to mandate both a market supply and a market demand. Brazil provided subsidies for ethanol production and low-interest loans to companies entering the ethanol business, establishing a domestic supply of ethanol. The government also mandated that Petrobras buy a set amount of ethanol, ensuring a market demand. The world's most successful ethanol program had an auspicious beginning; production quickly ramped up and by 1985, a mere ten years after the program was initiated, 95% of all cars sold in Brazil ran on pure ethanol. The program fell apart as quickly as it coalesced, however. Low oil prices in the 1990s, political and economic problems in Brazil, and a variety of other factors reversed the success of the program. Today, cars in Brazil run on the E22 blend.



Current US Ethanol Policy

The US also initiated an ethanol program during the oil crisis, but the program quickly fizzled afterwards. Today ethanol is receiving attention once again due to record-high oil prices. The US government, like Brazil, has instituted several measures to promote domestic ethanol production.

1. Ethanol producers receive a 51 cent subsidy for each gallon of ethanol they produce.
2. Some ethanol imports receive a 59 cent per gallon tax.
3. The Energy Policy Act of 2005 (EPACT) sets a goal of 12 billion gallons of ethanol by 2012.

Policy

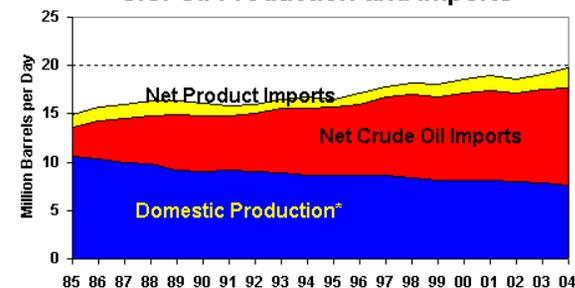
Whether an ethanol program is beneficial or not, from a policy perspective, depends on the goal of the program. The goal of Brazil's ethanol program was energy independence. Many people have argued for a similar program with this goal in the US. Unfortunately, current scientific data indicates that such a goal is not presently within reach. Achieving a full replacement of gasoline using corn ethanol would require using nearly all arable land in the US. Cellulosic technology may make such a goal more realistic, but for the moment, it is still too early to say.

Others have advocated an expanded ethanol program for its positive environmental effects. Many scientists have concluded that ethanol is a cleaner burning fuel than gasoline and could help us meet greenhouse gas reduction targets. Ethanol could be blended into gasoline in higher amounts with relatively little effect on the consumer. This would achieve the stated environmental goal and would not require any radical changes.

Technology

Part of Brazil's success with ethanol was due to a high-yield ethanol source crop, sugarcane. It is not possible to grow sugarcane in much of the US due to the difference in climate, but there is a solution better than corn. Cellulosic plants (fibrous plants such as switchgrass and corn stover) can be acid treated to create sugars which can be fermented by bacteria into ethanol. This is a promising technology because switchgrass has shown ethanol yields of 1000-1500 gallons per acre. An added benefit is that the byproducts of cellulosic ethanol production can be burned to facilitate its production as well as generate electricity.

U.S. Oil Production and Imports



*Domestic production includes crude oil, natural gas liquids, and other hydrocarbons and alcohol production, but does not include refinery gain

Conclusions & Recommendations

- An ethanol program will not achieve energy independence for the US with current technology
- Such a program *could* be accomplished through upcoming cellulosic technology
- An ethanol program would provide significant environmental benefits
- We recommend the following policy actions:
 - Eliminate subsidies for corn ethanol, since it is a technological dead end, and redirect those to cellulosic ethanol projects
 - Close the import tax loophole and impose a tax on *all* ethanol imports
 - Use ethanol to fill the gap created by rising gasoline demand and decreasing gasoline production