

SUPPORTING BIOFUELS: A CASE STUDY ON THE LAW OF UNINTENDED CONSEQUENCES?

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Overview

Biofuels have been gaining new prevalence in recent years. There are primarily three reasons for this new popularity: 1- search for substitutes to oil that is becoming more expensive and geopolitically riskier; 2- desire to lower emissions; and 3- supporting the agricultural sector, especially in the developing countries. These are the same reasons that led to previous rush to biofuels in the 1970s. Except for Brazil, biofuels failed to reach significant market share: 1-2% in the US, 4-7% in China, India and EU. Nevertheless, many countries are putting policies and mandates into place to raise the share of biofuels. However, even the Iowa Renewable Fuels Association accepts that ethanol cannot compete with today's expensive gasoline without the subsidies. Ethanol from corn yields about seven times less energy content than ethanol from sugar cane per unit of energy used in its production. Cellulosic ethanol can be twice more efficient than sugar cane based ethanol but technology remains experimental and expensive. A recent study from Stanford concluded that using E85 in Los Angeles could actually increase health risk relative to gasoline. Others have claimed for years that ethanol production emits more pollutants than gasoline production when the whole life cycle from corn production is taken into account. A researcher from the Agriculture and Trade Institute in Minneapolis stated that increasing corn production is not sustainable due to increased need for water and pesticide use. During the recent excitement, price of corn increased from \$2.25 per bushel in summer 2006 to \$4.25 in February 2007. Corn prices have risen in the past but many industry followers now believe that ethanol pressure will keep them high for an extended period this time around. Substituting corn for other commodities such as soy is also causing an increase in the price of these commodities. It appears that none of the three reasons are well founded. This study compiles most recent evidence on infrastructure, technology, cost, environmental impact, substitution effect, and trade considerations for biofuels to shed some light on the complex cost-benefit accounting of supporting biofuels.

Methods

Case studies, cost-benefit and economic impact analyses.

Results

So far, recent rush to biofuels have

- added to the pressure in factor markets and crowded out investment in other sectors (e.g., oil refining)
- contributed to rising food price inflation because of
 - increasing prices for corn and soy, which increase the cost of feed to livestock and poultry industries.
 - increasing price of many agricultural products due to reallocation of cropland to corn to meet increased demand for corn from the ethanol industry.
- decreased grain exports: the lost export revenue to farmers can be significant. If grain importers from U.S. offer higher prices, corn may not be available for ethanol refineries and food prices may rise further globally.
- raised concerns about environmental impacts: increased corn production will require increased use of fertilizers and pesticides. Nutrient loading from nitrogen may cause various environmental issues, including the worsening of the “dead zone” in the Gulf of Mexico. Increased use of water for farming practices may cause depletion of aquifers and common pool conflicts.
- put pressure on the infrastructure to transport and distribute ethanol (rail cars, tanker trucks and barges, and gas stations) and blending capacity at refineries. These constraints raise the cost of using ethanol. Expanding this infrastructure face the same constraints in factor markets.

Conclusions

The support for corn-based ethanol is turning to be a perfect example of the law of unintended consequences. At the societal level, the negative impact of supporting corn-based ethanol on food prices and supplies, and possibly on the environment far outweigh

the perceived (or rather hoped for) economic benefits. The fuel remains relatively expensive and with limited market penetration despite all the support. There seems to be no justification for supporting this industry with tax and non-tax incentives and protecting it from more efficient imports with tariffs. Policy makers continue to ignore market forces at their own and unfortunately society's peril. Funds could possibly be better spent on research and development of options with less negative externalities that could prove themselves in a market environment.

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