Conclusions and Lessons for Governments

This article has examined the costs and benefits of alternative biofuel policies in the context of achieving various environmental, energy and agricultural goals. Research on the welfare economics of renewable energy policy is in its infancy and the economic effects of biofuel policies are not only complex and difficult to understand, but are ultimately ambiguous in theory. Nevertheless, a clear picture emerges regarding the implications for policy-makers on what to do with current biofuel policy. This is in contrast to the traditional literature, which compares the economics of alternative environmental policies. Some of the issues that surfaced from the discussions above are:

- Biofuel policies on their own can have very large welfare effects, either positive or negative.
- Mandates are clearly superior to all other policies, with few tradeoffs arising.
- Adverse interactions between policies used simultaneously are highly likely, that is, with (1) adding subsidies to mandates, or (2) adding biofuel policies to farm subsidy programs.
- Benefits from any biofuel policy can easily be offset by the inefficiencies of other policies (e.g., by import barriers such as tariffs, production subsidies and sustainability standards). Such offsetting policies should be scrapped.
- Although it is highly undesirable to use biofuel policies in combination with each other, a cross-sector hybrid instrument can potentially succeed in a second best setting (e.g., with a suboptimal fuel tax, a mandate may improve social welfare).
- There are no biofuel policies analyzed here that complement each other; either they cannibalize each other or have no effects.
- Biofuel policies are clearly inferior to a portfolio of specific taxes and subsidies that directly target environmental, energy and agricultural policy goals.
- Taxpayer costs of biofuel and renewable energy policies in general are very high, especially relative to their benefit (which can easily be negative and highly so).
- Biofuel subsidies may be warranted in specific situations like compensation for volumetric fuel taxes that discriminate against biofuels because of lower miles per gallon obtained, or if lower CO_2 emissions with ethanol due to sequestration occur while growing the crop.
- Biofuel policy can have a large impact on corn prices. This was not the case historically, because the implied transfer to the ethanol industry was bridging the gap between the oil price and the intercept of the ethanol supply curve. This represents significant "rectangular" deadweight costs. Biodiesel is even worse. Eighty percent of biodiesel capacity in both the United States and Germany currently lies idle in the face of both high consumption subsidies for biodiesel and oil prices.

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