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Title: Reducing Household Gasoline Consumption in The United States through Tax Incentives for the Purchase of Clean Fuel Automobiles

This econometric investigation was undertaken to determine whether a U.S. federal tax incentive program offering income tax deductions to households purchasing clean-fuel cars or constructing clean-fuel refueling infrastructure achieves any measurable reduction in household-level gasoline consumption.

The clean-fuel tax deductions examined in this paper are intended to promote environmental protection by shifting the consumption of gasoline that households use to fuel their automobiles to cleaner burning energy sources such as natural gas or electricity that result in less harmful air emissions. Since it has long been known that automobiles are major contributors to the emissions of carbon dioxide (greenhouse gas), as well as NOX's and reactive hydrocarbons (causing ground-level ozone), programs aimed at reducing harmful vehicle emissions could produce significant environmental benefits.

On the other hand, an unfavorable outcome for this program might involve significant taxpayer deductions with no corresponding environmental benefits. A negative or neutral programmatic outcome is theorized in two scenarios: if the high costs of cleaner-fuels or the relative inconvenience for refueling compels many households to maintain their use of conventional internal-combustion vehicles; if government subsidies for vehicle purchases create a strong income effect that encourages households to drive more total miles, which could have an ambiguous effect on overall environmental quality even with the cleaner fuels.

The main provisions of the clean-fuel tax incentive program under investigation in this paper can be found at 26 USCS § 179A and 40 CFR Part 88. The incentive program was passed into law into 1992 as part of the Energy Policy Act, and has been amended several times. The data used for this study comes from the repeated cross-sections of the U.S. Consumer Expenditure Survey (CES) over the 11 year period from 1990-2000. The CES isn't panel data, but it provides detailed micro level information about household consumption.

Two model specifications are then introduced using ordinary least squares (OLS) and fixed effects. The results to date show no significant effect on household gasoline use from the clean-fuel vehicle tax incentive program. However, several possibilities are proposed to explain these results, noting evidence that the tax incentive may be an important transitional step in The United States in conjunction with other incentive measures, such as a fuel tax.