

Title: Does “Green Taxation” stimulate diffusion of environmental friendly passenger vehicles?

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Abstract

This paper examines the effects of “green taxation” on automobiles by applying Berry, Levison and Pakes(1995)’s framework to the Japanese auto market. In 2004, CO₂ emission from the transportation sector has risen 20% from the 1990 emission level. The high level of emission from automobiles is a crucial issue in complying with the targets set by the Kyoto Protocol in Japan. In this paper, first, we model the demand and supply sides. On the demand side, consumers make decision on vehicle choices based on prices and product characteristics. On the supply side, producers are playing an oligopoly game with Bertrand-Nash equilibrium. Second, we estimate both demand and supply functions using 1998 Japanese aggregate automobile sales data. Finally, using these estimates we conduct policy experiments, namely, 1) increase in fuel taxation, and 2) introduction of "Green Taxation". After policy experiments we find that a 2% increase in fuel cost reduces equilibrium prices and quantities, and a 20,000 yen rebate (subsidy) results in negligible changes in demand. Therefore, if the objective of the government is to reduce fuel consumption, it would be more effective to impose direct taxes on fuel consumption via gasoline taxes than indirectly subsidizing the purchase of fuel efficient vehicles.