

Can Green Car Taxes Restore Efficiency?
Evidence from the Japanese New Car Market

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Abstract: To quantify the economic impacts of Japan's feebate policy, a random-coefficients logit model is estimated for quarterly automobile sales between 2007 and 2012 from the Japanese new car market. For identification of the structural parameters, we exploit the policy-induced variation in effective car prices and the location of product-specific vehicle taxes as instruments. The estimated demand system allows us to simulate counterfactual Bertrand-Nash equilibria in response to alternative policy scenarios. Our results indicate that Japan's feebate policy induced a sizable increase in economic surplus, yet only a small improvement in sales-weighted average fuel efficiency, relative to the no-policy counterfactual. We also design an optimal feebate policy, which maximizes total economic surplus subject to a tax revenue constraint, by explicitly accounting for market power, product attributes, and carbon dioxides emissions rates. The policy is predicted to induce sizable improvements in both economic surplus and average fuel efficiency over Japan's feebate policy without requiring any decrease in tax revenues.

URL: <http://pweb.sophia.ac.jp/ykonishi/EcoCarSubsidy.pdf>

Key Words:

Automobile demand, discrete choice models, product differentiation,
random-coefficients logit, vehicle emissions, optimal vehicle taxation, imperfect
competition

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