Willingness to Pay for Environmentally Friendly Public Transportation: Evidence from the European Union

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Résumé

The European Union (EU) is taking actions to mitigate domestic greenhouse gas (GHG) emissions and aims to achieve a share of 20% of renewable energy in total energy consumption by 2020. In order to reduce GHG emissions, environmentally friendly public transportation (EFPT) options, such as electric and hydrogen buses, have gained a great amount of attention in many European cities in recent years. Since the introduction of EFPT has the characteristic of a public good as it brings benefits that are shared by the entire local population, we apply the contingent valuation method (CVM) to measure the willingness to pay (WTP) for the non-market benefits induced by EFPT based on a survey with a payment vehicle of a tax increase per month in 31 European countries.
Based on the Bayesian logit with identified scale model, we first estimate a model including occasional, moderate and heavy users, and find the counter-intuitive result that moderate and heavy users have lower WTP to support the implementation of EFPT despite the fact that they are more likely to benefit from it. This counter-intuitive result may be due to a status quo bias where strong preferences for the current state of affairs can hamper support for a renewable energy transition. We therefore estimate a second model omitting moderate and heavy users, and find occasional users' WTP to be indistinguishable from that of non-users. In addition to estimates based on user types, we find a predominately positive effects of respondents' perceptions of renewable energy and their environmental awareness on the WTP for the introduction of EFPT.
Overall, we predict an average WTP of 7.462 euros and 7.88 euros depending on the inclusion of moderate and heavy users across all 31 countries. In both model specifications, the minimum and maximum predicted WTP are approximately 3 euros and 12 euros for the Czech Republic and Cyprus, respectively. Also, the shapes of predictive WTP densities are similar except for Cyprus, Greece and Romania, which show more spread-out WTP distributions. In addition to numerical values and graphical representation of WTP, we also find the percentage of WTP relative to median income is increasing as PM10 concentration increases.

Mots-Clés: Willingness to pay, environmentally friendly public transportation, Bayesian logit with identified scale

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