Simultaneous estimation of a joint time use, expenditure allocation and mode choice model for Austrian workers

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Recent research has shown a trend towards a potentially more insightful measure by decomposing the value of travel time (VTT) - typically derived from discrete choice models - into two separate parts: The value of leisure (VOR) and the value of time assigned to travel (VTAT). In this paper we refine the micro-economic modeling framework proposed by Jara-Diaz et al. (2008), allowing for 1) correlations between continuous time use and expenditure allocation 2) correlations between continuous equations and discrete mode choices and 3) correlations within individuals' mode choices by accounting for the panel structure, using a representative sample of 748 Austrian workers observed over one week (Aschauer et al., 2018).

Compared to the independent estimation approach, although coefficients are similar, the simultaneous estimation of correlated coefficients yields a significant increase in model fit, and leads to a - from an analytical point of view - substantial simplification of the modelling structure. VTT (10 Euro/h for car, 4 Euro/h for public transportation, 8 Euro/h for bike and 15 Euro/h for walk) and the resulting VTAT (as the difference between VOR and VTT) vary substantially between the different modes, implying that e.g. the conditions of travel in public transportation are perceived more pleasant compared to car.

Literature

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