A New Multiple Discrete-Continuous Choice Model for Percentage-Based Data

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In recent years, the discrete-continuous models for multiple choices and allocation of time have seen great progress in consumer behavior analysis in marketing and transportation research. The models are based on the random utility maximization theory. They usually use Kuhn-Tucker conditions for likelihood maximization under non-negativity constraints and allow for both interior and corner solutions. However, to the best of our knowledge, all these models are applied to data in absolute scale. We know that quite often individuals allocate their total budget or total time on different comedies or activities in a percentage-based manner. In this paper, we propose a new multiple discrete-continuous choice model for this kind of data. The model formulation and estimation method are discussed, followed by simulation studies and real-life data analyses. The model's performances are compared with the existing ones, showing its advantage in explaining consumers' behavior in multiple-choice decision making.

Key Words: Multiple discrete-continuous choice model; percentage-based data; use of time; random utility maximization theory