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**Abstract**

(Abstract should be about 150−200 words which can conclude the whole content of the paper, including purpose, method, results and conclusion. Equations, figures and tables, as well as references are not supposed to appear in this part. When abbreviation is firstly used, it should contain the full name with its abbreviation included in parentheses, such as “mixed multinominal logit (MMNL) model”. Do NOT use the first person as subject. Do NOT repeat the title as the first sentence of the abstract. Simple sentence and active voice are preferred, and verb should be close to the subject.)

This study conducts an experimental analysis of risky travel choice behaviour, while accounting for the trade-off between attributes, nonlinearity in utility specification and perceptual conditioning. The focus is on empirically measuring between-individual heterogeneity in beliefs, and a key finding is that the sampled decision makers are associated with different levels of pessimism. The accommodation of individual beliefs in modelling risky decisions contributes significantly to the explanation of the choice data, relative to the normative Expected Utility Theoretical model which directly uses the probabilities of outcomes and implicitly assumes belief neutrality. The implication of pessimistic beliefs for valuing willingness to pay is illustrated at the individual level.

**Keywords:** Decision making under risk; Choice behaviour; Belief; Willingness to pay; Rank-Dependent Utility Theory

(about 5-8 words separated with “;”; use small letters except technical terms. Abbreviations should contain full name with abbreviation included in parentheses.)

**1. Introduction**

Choice situations may be deterministic or probabilistic. In the former (latter) choice domain, the attribute levels of a choice alternative tend to be constant (variable) over repeated experiences. For road transport systems, in particular operating in urban areas, variations of travel time are inevitable due to fluctuations at the demand side and supply side of traffic.

Most conventional travel time variability research simply treated travel time variability as an additional component of disutility within a linear utility modelling framework (Taylor, 2013), while ignoring the psychological influence of risk on decision making.

(Equations, figures and tables are usually not supposed to appear in this part.)

**2. Material and methods**

*2.1．*

*2.2．*

*2.2.1．*

*2.2.2．*

**3. Theory/calculation**

*3.1．*

*3.1.1．*

*3.1.2．*

*3.2．*

**4. Results**

*4.1．*

*4.2．*

*4.2.1．*

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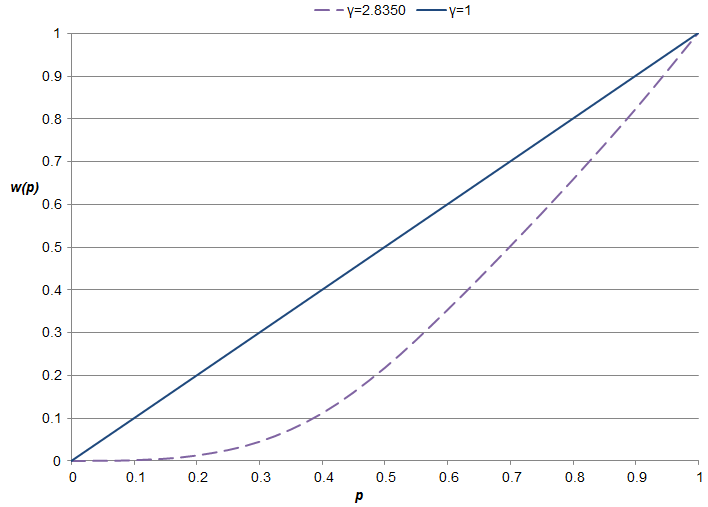
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Fig. 2.Non-linear probability weighting function.

Table 1. The AS\_EEUT MMNL model (assuming belief neutrality).

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Variable | | Coefficient | | *t-Ratio* | |
| *Nonrandom parameters:* | | | | | |
| Reference constant | | 0.6406 | | 4.51 | |
| Cost ($) | | −0.3887 | | −9.62 | |
| Tollasc | | −0.4259 | | −2.65 | |
| Age (years, reference (first) alternative only) | | 0.0174 | | 6.25 | |
| *Means for random parameters:* | | | | | |
| Alpha (α) | | 0.7174 | | 94.94 | |
| Probability weighted travel time (minutes) | | −1.3095 | | −47.22 | |
| *Standard deviations for random parameters:* | | | | | |
| Alpha (α) | | 0.3444 | | 25.94 | |
| Probability Weighted Travel Time (minutes) | | 1.3095 | | 47.22 | |
| No. of observations | | 4,480 | | | |
| McFadden Pseudo R-squared | | 0.419 | | | |
| Log-likelihood | | −2,858.15 | | | |

All parameter estimates are statistically significant at the 99 percent confidence level. The two models offer some similar findings. For example, the estimated parameters for the reference specific constant are positive, which suggests, after accounting for the observed influences, that sampled respondents, on average, prefer their current trip relative to the two stated choice alternatives.

**5. Discussion**

*5.1.*

*5.2.*

Willingness to pay is an important output of multi-attribute choice studies. Under the AS\_ERDUT model, the WTP formula is given in Eq. (8), which takes the transformed probabilities of the travel time distribution (in this study the decision weights of late, early and on-time arrival). Instead of treating mean travel time and variability separately, this WTP value, referred to as the value of *decision-weight* weighted travel time savings (VDWWTTS).

**6. Conclusions**

(Conclusion should be summarized in points without tedious description of background, method, etc.)

For the generalisability of the experimental outputs, Loomes and Pogrebna (2014), Zhou and Hey (2018), among others, highlight that researchers need to design experiments with the similar contexts as the real-world decision problems under investigation and elicit economic/psychological elements that best explain behaviour in that specific situation. This study used a choice experiment, which is close to the real-market settings and established on the recent travel experiences of sampled car commuters where two SP alternatives were pivoted around their knowledge.

**Declaration of competing interest**

The authors declare that there are no conflicts of interest.

**Acknowledgments**

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**References**

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**Appendix A. Supplementary data**

Supplementary data to this article can be found online at <http://doi/org/...>