

Taboo Trade-Off Aversion in Discrete Choice Experiments: A Case Study in the Domain of Transport Policy

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This study is the first to model and empirically explore taboo trade-off aversion in a discrete choice context, using a stated choice experiment concerning support for transport policies.

A very influential body of literature in psychology, based on the seminal work of Philip Tetlock and co-workers (e.g., Fiske & Tetlock, 1997; Tetlock et al., 2000), puts forward the idea that **decision makers consider some types of trade-offs morally problematic, or taboo**. Their findings suggest that there are many situations where decision makers refuse to make a trade-off between different attributes of choice alternatives, and even become upset (express moral outrage) when being asked to consider such trade-offs. For example, trade-offs are considered taboo when two attributes belong to different 'spheres'; usually one attribute belongs to the sphere of market transactions (e.g. a price attribute), while another attribute belongs to, for example, the sphere of social relations (e.g. friendship) or another sphere in which market transactions are frowned upon (e.g. healthcare, or matters of war and peace). To consider just one possible example from the Transportation domain: while a decision maker may have no trouble trading off money and travel time, she may be likely to consider a trade-off between money and traffic fatalities more morally problematic.

The notion of taboo trade-offs goes against the common assumption that decision makers are willing to make trade-offs between all attributes of choice alternatives, which lies at the heart of microeconomic consumer theory (e.g., Lancaster, 1966; Keeney & Raiffa, 1976), and which is embedded in the overwhelming majority of choice models used by the travel behaviour research community (e.g., Ben-Akiva & Lerman, 1985; Train, 2009; Hensher et al., 2015). Also, discrete choice models based on alternative, semi-compensatory decision rules such as loss aversion or regret minimization implicitly presume that decision makers are still willing to trade-off one attribute (such as price) against another one (such as quality) to arrive at a choice that is optimal for them (e.g., Leong & Hensher, 2012; Chorus, 2014). And, although at first sight lexicographic models would seem to be able to capture taboo trade-off aversion, this is not the case: where lexicographic models postulate that all trade-offs are precluded,

taboo trade-off aversion suggests that an attribute (say traffic fatalities) may be easily traded off against some attributes (say non-fatal traffic injuries) but not so easily against other attributes (say travel time).

This study is the first to model and empirically explore taboo trade-off aversion in a discrete choice context. To capture possible taboo trade-off aversion, we propose to extend the conventional linear RUM model by including so-called taboo trade-off penalties, creating a model that is still compatible with the choice modeller's standard toolbox, while being flexible enough to capture differential trade-offs that may be present in the data. Using this model, we then explore the presence (and size) of taboo trade-off aversion in the Transportation context, using a data set specifically collected for this purpose. More specifically, we designed a choice experiment where respondents – forming a representative sample of Dutch commuters – were asked to state their (dis-)agreement with a series of 16 transport policies which differ in terms of their impact on taxes, travel times, traffic injuries and traffic fatalities. By using a full factorial design, we ensured that taboo trade-off aversion (if present in our data) is identifiable in terms of taboo trade-off penalties.

Results, based on estimation of a variety of (Mixed) Logit model specifications with and without taboo trade-off penalties, can be summarized as follows:

- There is a significant and sizeable taboo trade-off aversion underlying choice behaviour of respondents: if travel time or tax reductions are gained at the expense of increases in the number of traffic injuries or deaths, this leads to a larger inclination to oppose a policy than would be predicted by a conventional choice model.
- This taboo trade-off aversion is present in the data (i.e., there is a relatively low share of support for policies that involve taboo trade-offs) as well as in predictions of our taboo trade-off aversion models.
- By ignoring the presence of taboo trade-off aversion, conventional choice models result in lower model fit, (somewhat) lower out of sample predictive power, and biased parameter estimates. More specifically, by overlooking taboo trade-off aversion, standard models overestimate the importance of traffic injuries and traffic deaths, and underestimate that of travel time and tax.
- Older and female respondents are more inclined to avoid taboo trade-offs, i.e. these segments have relatively high taboo trade-off penalties.

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