



## Mode choice models with attribute cutoffs analysis: the case of freight transport in the Marche region

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### Abstract

This paper shows that, when modelling freight demand, taking into consideration the presence of attribute cutoffs is important and has relevant repercussions on the estimates of service attributes coefficients. In this paper we focus on mode choice models for freight transport demand in the Marche region in Italy. Specific reference is paid to furniture and metallurgic productive sectors given their relevance for the region and their potential vocation for intermodal transport. Preference elicitation is done using choice based conjoint analysis. The study shows that there is a structural difference among the two sectors and that they have heterogeneous preferences.

*Keywords:* Intermodality; Freight transport; Non-compensatory choice.

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### 1. Introduction

This paper studies mode choice in freight transport using an extension of the traditional compensatory utility maximisation framework which constitutes the base of most theoretical and statistical research in choice modelling, in general, and in transportation demand estimation, in particular.

The paper is innovative under two different aspects. Methodologically it adopts a new way of modelling choice in discrete situations. In fact, the analysis of attributes cutoffs is directly incorporated in the formulation of the decision problem. The constraint implicit in the idea of a cutoff, separating compensatory from non compensatory choices, proves sometimes to be "soft", in the sense that it is defined as a constraint *ex ante*, but is viewed as violable and compensable *ex post* (see Swait, 2001). This methodological innovation makes room for the formulation of penalised utility functions that allow for violation of "soft" cutoffs at the cost of a reduction in the utility perceived. The theoretical innovation is proven to be amply consistent with observed choices using data derived from a series of stated preference exercises.

The paper is also innovative for the research field chosen. In fact, the idea of studying mode choice for freight in territorially concentrated industrial districts in Italy

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