



KATHOLIEKE UNIVERSITEIT LEUVEN

## Statistics and Econometrics Seminar

Joint organization by

ORSTAT, Faculty of Business and Economics and the Statistics Research Group,

Faculty of Science

Leuven Statistics Research Center

### Prof. Dr. Dirk Temme

Schumpeter School of Business and Economics, Bergische Universität Wuppertal, Germany

## “Integrated choice and latent variable models - structure, estimation, and applications”

Thursday, March 31, 2011

12.00–13.00h

Location: Room HOG 03.101, Naamsestraat 69, Leuven.

Supporting research project: GOA-project 2007/04

**Abstract.** Traditionally, discrete choice models have directly mapped observed features of alternatives and observed characteristics of decision makers to overt choice behavior. However, extending choice models with latent variables like perceptions, values, or attitudes as explanatory variables can lead to a more realistic representation of the choice process taking place in the decision maker’s ”black box” and should thus provide greater explanatory power (Ben-Akiva et al., 2002; Walker & Ben-Akiva, 2002). These so called integrated choice and latent variable (ICLV) models represent a promising new class of models for the analysis of stated or revealed preferences which merge classic choice modeling with the structural equation approach (SEM) for latent variables. So far, the relatively few applications of the ICLV approach only include latent variables as direct determinants of choice but neglect causal relationships between latent variables commonly investigated in structural equation modeling (for an exception, see Dellaert/Stremersch 2005 as well as Temme et al. 2008). Following Ben-Akiva et al.’s (2002) recommendation, a more comprehensive framework is proposed which simultaneously considers a multinomial logit model as well as structural relationships between latent variables. Such an approach also allows for interaction effects of the latent variables. The paper presents the general structure of the proposed ICLV model and discusses its estimation. An empirical study on transport mode choice illustrates the application of the ICLV approach.