

## Estimating Nesting Structures

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### *Abstract :*

The nested logit model is commonly used to estimate demand in differentiated products markets. However, it and its generalizations require an assumed nesting structure. In this paper, we propose to estimate the nesting structure from the data. For this, we build on a recent generalization of the nested logit model that allows any possible nesting structure and is consistent with utility-maximization by heterogeneous consumers. In this setting, estimating the nesting structure amounts to estimating a linear model with many endogeneous variables, which is challenging. We show theoretically and in simulations that non-negativity constraints coming from economic theory are sufficient to recover the nesting structure from data. In doing so, we explore the regularization properties of the non-negative least squares estimator as demonstrated in the statistical literature and expanded here to an instrumental variable context. This estimator may be of independent interest.