

## Use of Multistage Transition Regression Models for Credit Card Income Prediction

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**Abstract :** Because of the variety of the card holders' behaviour types and income sources each consumer account can be transferred to a variety of states. Each consumer account can be inactive, transactor, revolver, delinquent, defaulted and requires an individual model for the income prediction. The estimation of transition probabilities between statuses at the account level helps to avoid the memorylessness of the Markov Chains approach. This paper investigates the transition probabilities estimation approaches to credit cards income prediction at the account level. The key question of empirical research is which approach gives more accurate results: multinomial logistic regression or multistage conditional logistic regression with binary target. Both models have shown moderate predictive power. Prediction accuracy for conditional logistic regression depends on the order of stages for the conditional binary logistic regression. On the other hand, multinomial logistic regression is easier for usage and gives integrate estimations for all states without priorities. Thus further investigations can be concentrated on alternative modeling approaches such as discrete choice models.

**Keywords :** multinomial regression, conditional logistic regression, credit account state, transition probability

**Conference Title :** ICEORS 2015 : International Conference on Econometrics, Operations Research and Statistics

**Conference Location :** Zurich, Switzerland

**Conference Dates :** January 13-14, 2015