STATISTICAL MODELLING: APPLICATION TO THE FINANCIAL SECTOR

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Abstract

Our research is centred on the stochastic structure of matched open populations, subjected to periodical reclassifications. These populations are divided into sub-populations. In our application we considered two populations of customers of a bank: with and without account manager. Two or more of such population are matched when there is a 1-1 correspondence between their sub-populations and the elements of one of them can go to another, if and only if the same occurs with elements from the corresponding sub-populations of the other. So we have inputs

and outputs of elements in the population and along with several sub-populations in which the elements can be placed. It is thus natural to use Markov chains to model these populations.

Besides this study connected with Markov chains we show how to carry out Analysis of Variance – like analysis of entries and departures to and from de populations of customers. Our purpose is to study the flows in and out of customers in classes for the two populations and to make research on the influence of the factors year, class and region. We used the Likelihood ratio tests for the hypotheses formulated on the basis of these factors. In our work we verified that major hypotheses were all rejected. This raises the question of what are the effects and interactions truly relevant. Looking for an answer to this problem, we present the first partition to a change in the log Likelihood. This partition is very similar to the analysis of variance for the crossing of the factors that allowed us to use algebraic established results, see Fonseca *et al.* (2003, 2006), for models with balanced cross.

References

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