INTRODUCTION

The articles compiled in this volume of „Acta Universitatis Lodziensis" were presented at the 19th International Conference on Multivariate Statistical Analysis – WAS 2000. The Conference was organised by the Chair of Statistical Methods of the University of Lodz in cooperation with the Polish Statistical Association. It was held on December 4–5, 2000, in the Conference Centre of the University of Lodz. The range of subjects of interest of the Conference papers was fairly wide, from the theory of probability, through statistical methods to different applications of statistical methods in social and economic sciences.

The articles are divided into three thematic groups:
1. Probability Theory and Statistical Methods,
2. Statistical Inference.
3. Applications of Statistical Methods.

The first group includes articles dealing with statistical methods in a general sense i.e. not confined to any particular application, although some of them are illustrated with some examples. Grażyna Trzpiot (*Multivariate multivalued random variables*) presented the integral for multifunction and some property of multivalued random variables in multivariate case. The theory of mutlivalued random variables has been established for Banach space-valued and for Bochner-integrable function. The main purpose was to present the theory of multivalued random variables as a generalization of point-valued cases. Małgorzata Kobylińska and Wiesław Wagner (*Numerical aspects of determining measures and contours in depth for data in R^2*) focused their attention on the numerical aspects of construction of the contour for samples in space R^2. Certain numerical aspects with their direct implementation in the TURBO–PASCAL programming language were presented. The theoretical basis, as regards measures in depth and contours in depth was also included. Agnieszka Rossa (*On the backward selection procedure for graphical log-linear models - Monte Carlo results*) investigated one of the ways to reduce the number of possible log-linear models for multidimensional tables. She studied some statistical

properties of the backward selection procedure by means of Monte Carlo methods. Jerzy Korzeniewski (*Methods of two dimensional images restoration abstract*) proposed a new algorithm to the restoration of two dimensional black and white images contaminated with a channel noise. The algorithm was compared with ICM algorithm and with methods based of Bayesian morphology.

The second group of articles deals with testing and estimation procedures. Lesław Gajek (*Random fluctuation of results of pension plans assessment*) estimated the statistical fluctuation of the results of pension plan assessment. He showed that the variance of the relative deviation of the assessment result from the proper assessment decreases with the increase of discount rate and gave the approximate form of the variance with the aid of the central limit theorem. Czesław Domański (*Power of tests for randomness based on the number of multiple runs*) investigated the power of some generalised independence tests based on the number and length of runs for three or more kinds of elements by means of the Monte Carlo methods. Dariusz Parys (*The multiple stepwise procedure in regression analysis*) presented a multiple procedure for stepwise regression analysis based on traditional methods, such as F-test and test for partial correlations. This procedure, having multiple testing character, keeps the multiple significance level at a predetermined value, at least approximately. Dorota Pekasiewicz (*Sequential probability ratio tests of fraction for nonsimple samples*) considered a sequential probability ratio test for fraction. The following sampling patterns: individual dependent and layer sampling and aggregate two stage sampling. For these sampling patterns the samples were determined in the form of the statistics of the sequential test for fraction. Maciej Górkiewicz (*Estimation of measurement error in presence of continuous covariants*) tried a new grouping strategy based on k nearest neighbours in SDE of measurement error and investigated the performance of this strategy in presence of continuous covariants by means of Monte Carlo methods.

In the group of articles dealing with applications Bronisław Ceranka and Małgorzata Graczyk (*A relation between chemical balance weighing designs for $v + 1$ objects*) discussed the use of matrices of ternary balanced block designs for v treatments to the construction of chemical balance weighing designs for $p = v$ and $p = v + 1$ objects in which the estimated weights are uncorrelated. Małgorzata Kaczanowicz (*Time dominance in classification of dynamic structure*) investigated the possibility of applying dominance ranking methods (a kind of stochastic dominance ranking methods). She presented the simplicity and intelligibility of this method through the example of application to environmental data. Witold Kupść (*Some practical problems of multivariate survival analysis of epidemiological studies*) discussed different problems (e.g. selection of survival model and model variables) connected with the estimation

of the risk of death related to the set of characteristics called risk factors. Wiesław Pasewicz and Wiesław Wagner (*Probability model of winning tennis match*) built a probability model of winning a tennis match and derived expressions for the probability that a player wins a match. A simple numerical example calculating the probability of winning a match was also given. Agata Szczukocka (*Methods of analysing risk of single loan agreement and credit portfolio*) investigated two categories of credit risk management, those dealing with one loan and those dealing with credit portfolio. The paper is was attempt of reviewing of what has been done in the subject of applying statistical methods to risk management. Anna Szymańska (*Application of insurer's ruin model to assessment of company's risk*) studied the probabilistic model of insurer's ruin helping to assess insurance risk. In the paper two methods of estimating insurer's ruin probability were compared (Cramer-Lundberg method and Panjero method) with different assumptions concerning insurer's initial reserves and additional safety.

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