

## EDITOR'S NOTE AND ACKNOWLEDGEMENTS

This issue concludes the journal's activities for the year 2013. Therefore, besides of a short preview of the articles included in it (as usual), several points on related matters that have took place over the last year period are being mentioned as important to the journal itself or to the community of statisticians at large.

First of all, the journal has obtained a new mark of recognition, this time from the Index Copernicus International which included it into its system of citation, 'IC Journals Master List 2012'. On the community side, it was possible to deliver the Jerzy Splawa-Neyman Medal - that was established on the occasion of the 100th anniversary of the Polish Statistical Association - to Professor Graham Kalton, who was awarded the Medal for his extraordinary contribution to the contemporary statistics and to the survey methodology in particular. Since Graham Kalton could not attend the Association's meeting on April 2012 in Poznan during which the Medal was presented to its recipients, it was a great honor and pleasure for writing these words to hand it over to him personally; a brief note on Professor Kalton's main professional activities is on page 521. This issue provides us also with an opportunity to express our gratefulness, both on behalf of the Editorial Office and of all the journal's partners - especially of authors and readers - to our key collaborators, peer-reviewers, who kindly shared their knowledge and expertise with us and with authors in order to improve the quality of the published papers. We feel truly indebted to them and list their names in the 'Acknowledgements' below.

The present issue contains a set of ten papers divided into three categories: sampling methods and estimation; research articles; and other articles. While the first and the second constitute a regular part of the journal, the last one is composed of papers based on presentations given to the Multivariate Statistical Analysis Conference that was held on November 2013 at the University of Lodz. As the product of an event that took place within a series of such meetings being organized since 1981 on an annual basis, the papers were considered for publication jointly with Professor Czeslaw Domanski who kindly acted as a guest co-editor of (this part of) the issue being especially instrumental in arranging for them and making pre-selection among the conference presentations for this purpose.

The first group of articles begins with **Alina Jędrzejczak's** and **Jan Kubacki's** paper entitled *Estimation of Income Inequality and the Poverty Rate in Poland, by Region and Family Type*. Inspired by observation that growth may not be shared equally and economic crises may further widen the gap between the wealthy and the poor, they concentrate on inequality and poverty analysis of households and groups of populations distinguished by family type. They aimed at presenting some income inequality and poverty estimates based on data from the Polish Household Budget Survey using both direct estimation methods and a model-based approach. **Prayas Sharma** and **Rajesh Singh** propose *Improved Estimators for Simple Random Sampling and Stratified Random Sampling Under Second Order of Approximation* taking for a point of departure two types of estimators offered recently in the literature for estimating population mean  $\bar{Y}$ : one by Singh and Solanki (2012) and the other by Koyuncu (2012). Up to the first order of approximation and under optimum conditions, the minimum mean squared error of both the estimators is equal to the MSE of the regression estimator. The authors have tried to find out the second order biases and mean square errors of these estimators using information on auxiliary variable based on simple random sampling. In consequence of comparison of the performance of these estimators using some numerical illustration, the authors conclude that the behavior of the estimators changes dramatically when we consider the terms up to the second order of approximation. In the paper *A Ratio-Cum-Product Estimator of Finite Population Mean in Systematic Sampling* by **Rajesh Tailor, Narendra K. Jatwa, Housila P. Singh** the problem of estimation of population mean is considered using information on two auxiliary variables in systematic sampling. The Singh (1967) estimator for estimation of population mean in systematic sampling is being extended along with derivation of the expressions for the bias and mean squared error of the suggested estimator. The suggested estimator is compared with existing estimators and the conditions under which it is more efficient are discussed.

A set of three articles constitutes the second part of this issue, *research articles*. **Marek Cierpial-Wolan** in the paper *Processes in Transborder Areas – Significant Impact on the Economic Growth* discusses some methodological issues related to the specificity of the socio-economic processes that are taking place across the state borders and in the so-called transborder areas. The needs for a coherent system of information on these processes are discussed and an example of the required type of multi-method research is being presented, encompassing household survey, border traffic survey, entrepreneurship survey, etc. Some results of the employed information generating system turned out to be unexpected, especially in terms of the estimates of the selected items in Balance

of Payment (BoP). In conclusion it is suggested that the appropriate changes should be made in the calculation of Gross Domestic Product (GDP).

**Gurprit Grover, V. Sreenivas, Sudeep Khanna, Divya Seth** in the paper *Multi-State Markov Model: an Application to Liver Cirrhosis* present a frame to estimate survival and death probabilities of the patients suffering from liver cirrhosis and HCC in the presence of competing risks. Using database of a Delhi hospital, authors employed a stochastic illness-death model to the process of two liver illness states (Cirrhosis and HCC) and two death states (death due to liver disease and death due to competing risk), for individuals being observed for one year. The survival and death probabilities of the individuals suffering from liver cirrhosis and HCC have been estimated using the method of maximum likelihood. The probability of staying in the cirrhotic state is estimated to be threefold higher than that of developing HCC (0.64/0.21). The probability of cirrhotic patient moving to HCC state is twice (0.21/0.11) the probability of dying due to liver disease. Markov model proves to be a useful tool for analysing chronic degenerative disease like liver cirrhosis, providing insight for both the researchers and policy makers to issues related to this complex problem.

In the next paper, *The Properties of ATMs Development Stages - an Empirical Analysis* by **Henryk Gurgul** and **Marcin Suder** the crucial problem of the ATMs network management is discussed, i.e. the saturation level of withdrawals or the mean level of withdrawals after dropping particular withdrawals realized in the initial time period, taking into account the length of elapsing time period necessary to reach saturation level. The paper aims to define average withdrawals after achieving saturation level and mean time necessary to stabilize withdrawals (based on historical data). Specifying some conditions (concerning similarity in terms of location and date of start) under which ATMs exhibit similar characteristics of the development effects leads to possibility to predict the size of time necessary to achieve saturation and the average withdrawal in the state of saturation.

**Edyta Mazurek's** and **Achille Vernizzi's** paper *Some Considerations on Measuring the Progressive Principle Violations and the Potential Equity in Income Tax Systems* discuss the issue of conditions (including axioms) for an equitable tax system and the consequences of their violation in terms of the distortions in evaluation of the redistributive effect of taxes. The authors calculate both the potential equity and the losses using Kakwani (1977) progressivity index and the Kakwani (1984) decomposition of the redistributive effect, focusing on the measure suggested by Kakwani and Lambert for the loss in potential equity under violations of the progressive principle. They propose a measure based on

the tax rate re-ranking index, calculated with respect to the ranking of pre-tax income distribution. Presentation of its analytical characteristics is followed by empirical results within simulated tax systems. Also, simulations compare Kakwani and Lambert's measure with the potential equity of a counterfactual tax distribution which respects the progressive principle and preserves the overall tax revenue using the approach proposed recently by Pellegrino and Vernizzi (2013).

The third part of the issue - which contains papers based on the above mentioned presentations at the Multivariate Statistical Analysis 2013 Conference in Lodz - starts with ***Empirical Evaluation of OCLUS and GenRandomClust Algorithms of Generating Cluster Structures*** by **Jerzy Korzeniewski**. Both the OCLUS algorithm (Steinley and Henson, 2005) and genRandomClust algorithm (Joe and Qiu, 2006) of generating multivariate cluster structures have the capacity of controlling cluster overlap, though they both do it in quite different ways, with indication on the former as a method having much easier and intuitive interpretation. In order to compare them at work multiple cluster structures were generated by each of them and grouped into the proper number of clusters using  $k$ -means. The groupings were assessed by means of divisions similarity index (modified Rand index) and the comparison criterion was the behaviour of the overlap parameters of structures. Particular attention was given to checking the existence of an overlap parameter limit for the classical grouping procedures as well as uniform nature of overlap control with respect to all clusters.

**Marta Malecka's** and **Dorota Pekasiewicz's** paper ***A Modification of the Probability Weighted Method of Moments and its Application to Estimate the Financial Return Distribution Tail*** discusses the issue of fitting the tail of the random variable with an unknown distribution. It plays a key role in finance statistics enabling estimation of high quantiles and subsequently offers risk measures. The parametric estimation of fat tails is based on the convergence to the generalized Pareto distribution (GPD). The paper explored the probability weighted method of moments (PWMM) applied to estimation of the GPD parameters, focusing on the tail index, commonly used to characterize the degree of tail fatness. A modification of the PWMM method is suggested due to application of the level crossing empirical distribution function. Using simulation techniques statistical properties of the GPD shape parameter estimates - with reference to the PWMM algorithm specification - were examined, and the results showed that the choice of the level crossing empirical distribution function may improve the statistical properties of the PWMM estimates.

The paper ***The Distribution of the Number of Claims in the Third Party's Motor Liability Insurance*** by **Anna Szymańska** (which concludes this section)

addresses the automobile insurance tarification problem which consists of a sequence of two questions, or stages of the assessment process. The first one concerns assessment of the net premiums on the basis of known risk factors, called *a priori* ratemaking. The second, called *a posteriori* ratemaking, accounts for the driver's claims history in the premium. Each of them requires the actuary's selection of the theoretical distribution of the number of claims in the portfolio. The paper presents methods of consistency evaluation of the empirical and theoretical distributions used in motor insurance. Some illustrations are provided using data from different European markets.

This issue is concluded by a review of the recently released by The National Academies Press report of the CNSTAT Panel (Committee on National Statistics) on Measuring Subjective Well-Being in a Policy-Relevant Framework, by Włodzimierz Okrasa. Important contributions of the Panel's report to excelling conceptual and methodological approaches to measuring subjective well-being as a part of research activities of official statistics, that is currently increasing worldwide, is being emphasized, along with originality and usefulness of its recommendations.

**Włodzimierz Okrasa**

Editor

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