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26th International Scientific Conference Applications of Mathematics and Statistics in Economics (AMSE 2024)[1]

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The 26th International Scientific Conference Applications of Mathematics and Statistics in Economics was held from 28 August to 1 September 2024 in Pawłowice, a suburb of Wrocław, Poland. The organiser of this year's conference was the Department of Statistics of the Wrocław University of Economics and Business. The conference was attended by more than 40 experts from Czechia, Slovakia, and Poland, representing the Matěj Bel University in Banská Bystrica, Prague University of Economics and Business, Wroclaw University of Economics and Business, University of Pardubice, Slovak Statistical and Demographic Society, the Statistical Office in Wroclaw, the Czech Statistical Office, and the Statistical Office of the Slovak Republic.

At the opening of the conference, all conference participants were formally welcomed by Marek Kośny, Vice-Rector for Research and Academic Staff of the Wroclaw University of Economics and Business. He also delivered a salutation to the organisers and participants of the conference from Boguslawa Drelich-Skulska, Vice-Rector for Accreditation and International Cooperation.

The expert programme of the conference was opened by the President of the Czech Statistical Office Marek Rojíček with an invited lecture entitled *Macroeconomic Statistics Standards Implication in Measuring Economy,* in which he summarised the history of the development of national accounts standards and outlined the main changes that can be expected with the adoption of the SNA 2025 and ESA 2028 standards. The changes that the revised standards will bring are driven by the desire to (better) capture globalisation, digitalisation, well-being, environmental protection, and sustainability. The influence of digitalisation should be particularly evident in the recognition of data as a produced asset. In the longer term, the statistical office should focus on building a system of synthetic indicators reflecting well-being and/or sustainability, on the valuation of natural capital, and on other dimensions – human capital, health, and the like. In terms of data sources and valuation options, it will undoubtedly be a problem that solar, water, wind, and geothermal energy resources will be considered as economic assets.

[1] First published in December 2024 in *Statistika: Statistics and Economy Journal* No. 4/2024, reproduced with permission from the Editors and the author.

The second invited lecture on Responding to the Needs of Recipients: Data Disseminating Tools in Public Statistics on the Example of Statistics of Local Self-Government and Industrial Products was given by representatives of the Statistics Poland (formerly Central Statistical Office) – Małgorzata Kowalska and Paweł Sobik.

Other conference sessions were held in four sections: Microeconomics and Financial Issue, Pension System and Ageing Issue, Application of Statistical Methods and History of Statistics, Demographic and Social Issue. A Poster Session was newly included, in which five contributions were presented. It is very difficult to highlight the most interesting contributions; therefore, I would like to highlight only some of the contributions that I consider to be of high quality, interesting, and methodologically innovative.

In the Microeconomics and Financial Issue section, the most attention was caught by a contribution called *Regional Price Levels in the Czech Republic – 2020 Edition*. The authors (Petr Musil and Jana Fischerová) underlined that regional price levels represent a topic that is currently under spotlight. However, regional price levels, which would allow appropriate intra-regional comparison, are not officially published. The researcher team of the Prague University of Economics and Business has been dealing with this topic for a decade. The latest estimates for the reference year 2020 have been recently calculated; nevertheless, the results are preliminary and subject to further validation and accuracy improvement. The results are the latest estimates of regional price levels in Czechia reflecting long-term development in the Czech economy and its NUTS 3 Regions.

Delivered papers in the section of Pension System and Ageing Issue focused on current topics related to ageing of population, sustainability of pension systems, economic activity of the silver generation, and the like. Alena Kaščáková, Ľudmila Ivančíková, and Zuzana Rigová in their contribution called *Active Ageing in Slovak Regions* dealt with a concept of active ageing and possibilities of its statistical monitoring and evaluation. Population ageing puts a big pressure on the public health and social care systems. Therefore, the concept of active ageing is namely one of the proposed solutions how to mitigate part of this burden. The authors tried to compare success of regional policies on the level of individual domains of active ageing on data from regions of Slovakia. Petra Medveďová in her paper called *Integrity Sub-Index of the Global Pension Index in the Context of Indicator Weights* highlighted that a stable, efficient, and long-term sustainable pension system needs well-functioning pension plans in the private sector, as state pensions are not sufficient as the only source of pension income. That is why the integrity sub-index includes the quality of private pension plans, as well as the meaningful amount of costs associated with determining the amount of pensions and paying them out in the long term. The author offered the determination of the value of the integrity sub-index of the Global Pension Index for Slovakia for the year 2023 based on the criteria of Mercer, which does not yet include Slovakia among the evaluated countries. The method used appears to be the most effective in terms of the relatively most accurate determination of weights.

In the section of Application of Statistical Methods and History of Statistics, a theoretical paper of a collective of authors – Jana Cibulková, Veronika Nováková, and Zdeněk Šulc – on *Alternative Methods for Visualizing Categorical Data in Cluster Analysis* enjoyed a lot of attention and a broad discussion. The authors introduced four novel visualisation techniques for cluster analysis outputs on categorical datasets, aiming to achieve an analogue to the cluster scatterplot. The methods, named HCADM, HCAKL, LBCADM, and LBCAKL, display the results of cluster analysis in a two-dimensional space and they are derived from a contingency table. These methods are designed to arrange clusters into the most compact regions possible in order to provide coherent visualisation outcome. They emphasised that it is impossible to definitively choose one method of distance determination and clustering that is suitable for identifying observation clusters in all

cases. The selection of methods must always be approached individually and adapted to the specific situation. A critical step in graph creation is the identification of the category order.

In the last section, Demographic and Social Issue, a rich discussion was sparked by a paper entitled *Fertility Rates in the Czech Republic: Past Development and Possibilities of Projections to the Future* (authors: Ondřej Šimpach and Marie Šimpachová Pechrová). The authors presented the development of the total fertility rates in the Czech Republic and introduced the Lee-Carter model and its adjustments for modelling and the projections of the age-specific fertility rates. Modelling of the age-specific fertility rates by the stochastic Lee-Carter model has the advantage that the previous development of the indicator is taken into account while older data have lower weight than newer ones. However, the main drawback is that fertility rates are also influenced by economic and social variables that are not included in the model. The authors emphasised that the projected fertility rates can be than lower or higher than an expert guess – for example, expected fertility rates in a pessimistic, middle, or optimistic variant of the Czech Statistical Office in its population projection.

Contributions in the Poster Session mainly focused on the issue of quality of life, which has been addressed by Polish colleagues for a long time already. Of these, I consider it appropriate to highlight the contribution called *Enhancing Quality of Life for Seniors: A Comparative Study of Poland, Czechia and Slovakia* (authors: Joanna Dębicka, Agata Girul, and Edyta Mazurek). Their study evaluates older adults' quality of life and prioritises their needs across Poland, Czechia, and Slovakia. Additionally, a comparison between these countries has been conducted, highlighting differences and similarities in assessing older adults' quality of life. Through this analysis, best practices have been identified, along with areas requiring greater attention from the social policies of each country. The authors utilised ranking methods that account for the total and distribution of ranks within the sample, interaction analysis among various needs, and ProFit analysis and logit model to assess the impact of selected factors on the quality of life evaluations in these countries.

The Editor-in-Chief of *Statistika: Statistics and Economy Journal* kindly invited participants to submit papers on relevant topics to the journal.

A full programme of AMSE 2024 including abstracts of the papers presented, can be found at: http://www.amse-conference.eu . There you can also find information about the history of AMSE and links to previous years of the international conference.[2]

The tradition of alternating hosts (Slovakia – Poland – Czechia) continues and the 27th AMSE conference, which will be hosted by colleagues from the Faculty of Informatics and Statistics of the Prague University of Economics and Business, will be held in Czechia in the city of Hradec Králové at the turn of August and September 2025.

[2] In this report on the Conference, texts of the Book of abstracts (www.amse-conference.eu) were used.