From the Editors

The tragic events currently taking place in Ukraine have affected all aspects of life and activity, in private and public spheres, including an unspeakably difficult situation of the state statistics services.

The presented to the readers issue, entitled *A New Role for Statistics,* is the product of the jointly undertaken task by *Statistics in Transition new series* and *Statistics of Ukraine* to showing some of the enormity of problems experienced by the statisticians of Ukraine and the ways they are dealing with them. As first-hand accounts, articles by Ukrainian statisticians also provide information about the disruptions and types of assistance expected as well. A large part of possible reactions from the international community of statisticians has already been preliminarily identified and addressed in the opening of this volume basing on summary of the presentations that panelists representing various types of institutions and organizations gave at the session devoted to these issues within the last FCSM2022 conference (see *The Post-Conflict Reconstruction of the Statistical System in Ukraine...*).

This issue contains15 papers, which focus on functioning of statistical system in war conditions demonstrating the role of statistics in documenting the effects ofRussian aggression on the economy and society of the invaded country. Particular emphasis is put on the humanitarian crisis and the degradation of people's well-being, and on challenges faced by statisticians along with new tasks and approaches to overcome tchem.

This Joint Special Issue gives us also the opportunity to express our appreciation and thanks for all our contributors: authors, reviewers and all the participants of the editorial process.

This Joint Special Issue starts with the paper ***Problems realating to the statistical research of the national market of logistics services in war conditions*** by **Nataliia Hrynchak, Olha Yatsenko, Olena Bulatova,** and **Olena Ptashchenko**. The article discusses the theoretical principles of statistical research with regard to the national market of logistics services during wartime, and identifies the main structural changes that occurred due to the hostilities faced by the country. The authors determine the main factors influencing the functioning of the analysed market during war, as the statistical study of these factors is considered necessary for the transformation and development of logistics services. According to the results of the evaluation, analysis and structuring of relevant indicators and factors affecting the development of the

logistics services market, their priority is determined according to the type of logistics services, which makes it possible to identify new opportunities for development both at the micro- and at the macro level.

The article entitled *Using Big Data by Ukrainian official statistics when martial law applies: problems and solutions* by **Oleksandr H. Osaulenko** and **Olena Horobets** focuses on issues of the secure operation of official statistics in Ukraine during the application of martial law. The level of digitalisation in Ukraine as the basis for using Big Data was analysed by the proposed indices of internetisation, social progress and digital transformation, and several problems (methodological, legal, financial, and managerial) were identified as vital for statistical offices on their way to the implementation of Big Data in statistical processes. proposals concern tools for Big Data processing, The authors discuss the proposals such as Data Hypercube as a way for presenting Big Data for their visualisation, applications of Web scraping in estimating the consumer prices index, analyses of labour and real estate markets, and the applications of specialised software for the collection, processing and analysis of Big Data sets.

Nataliia Reznikova, Iryna Zvarych, Roman Zvarych, and **Ivashchenko Oksana** in their paper *The impact of the Russian-Ukrainian war on the green transition and the energy crisis: Ukrainian scenario of circular economy development* analyse how to minimise the impact of the energy crisis on the environment as one of the ways of getting rid of carbon footprints resulting from the growth of the russian energy and building a circular sustainable ecosystem in Ukraine. The paper determines the impact that the war has on the practice of applying resource nationalism associated with a wide variety of modern global problems. It also identifies the dominant diversification tendencies in the EU in terms of the circularity of the economy. The proposed concept of a global inclusive circular economy can be considered as a complex multidimensional system, whose main components are based on the economic, sociological, environmental and circular aspects of life.

The next article *A statistical study of climate change in Ukraine under martial law* by **Tetiana Kobylynska, Iryna Legan,** and **Olena Motuzka** presents the development of theoretical and methodological foundations of statistical research in the field of national environmental and economic accounting, which forms the basis for the development of indicators of climate change under martial law and shapes the adaptation to these changes. The paper studies issues of producing ecological information relating to Ukraine according to statistical data, and describes the main problems which arise during the construction of national environmental accounts were characterised. The article identified the key factors which influence to the largest extent the quality of statistical data and calculations, and which are necessary for the transformation and development of the statistical estimation of climate change under Russian military aggression.

Olha Lubenchenko, Svitlana Shulga, and **Halyna Pavlova** discuss ***Method of auditing in conditions of martial law***. The authors consider methodical recommendations on the actions of auditors during martial law that relate to such stages of the audit as the preparatory phase, the planning phase, the task implementation and the final phase. Under martial law, new risks are emerging, systematized by the authors and related to the identification of persons involved in terrorist activities and the proliferation of weapons of mass destruction. The paper has been developed also to assess ethical threats in the light of martial law. The war in Ukraine has forced auditors to tackle new challenges in complying with the latest legal requirements for identifying those involved in military aggression against Ukraine, on the one hand, and requiring careful compliance with International Standards on Auditing.

In the next manuscript entitled ***Current challenges related to the consumer price index (CPI) in Ukraine*** **Olga Vasyechko** analyses how to contribute to the maintenance and compilation of the consumer price index (CPI) in the current extreme situation caused by the Russian military aggression against Ukraine. The interaction between the ideal and conditional concepts of the index and their practical implementation is considered as a potential source of compilation improvement. The author argues that the main factor of the modern criticism of the CPI is the systematic deviation of the practical form of the index from its theoretical foundations. The revision of the paradigm of primary data sources allows for a significant reduction in the methodological and organizational limitations imposed by the extreme conditions of Russia's military aggression against Ukraine. In the conditions caused by the war, this kind of information allows regular estimates of the consumer price index for a large number of goods without the loss of quality, and control the structure of consumption both in general and by region, and opens prospects for reducing discrepancies between conventional concept of the CPI, its ideal concepts and their practical application.

Volodymyr Sarioglo and **Maryna Ogay's** article presents ***Approach to population estimation in Ukraine using mobile operators' data*** discussing the task of developing effective approaches to estimating the population size using data from existing sources, in particular the data of mobile operators regarding the number, location and mobility of subscribers. The article highlights the results of a study on the use of data from mobile operators, data from administrative registers, and the results of a special population sample survey on the use of mobile communication for the purpose of estimating the population. It also provides the results of experimental calculations of the population size in Ukraine as a whole and in particular regions. The developed approaches can be used to assess and monitor the number and location of the population of Ukraine, provided the availability and proper preparation of data of mobile operators, the availability of administrative records containing information

about the population, the availability of sample surveys, in particular on the peculiar use of mobile communications by the population.

Taisiia Bondaruk, Liudmyla Momotiuk, and **Iryna Zaichko** focus on *Budgetary policy of Ukraine in time of challenges and its impact on financial security.* The aim of the study is to deepen the theoretical and methodological foundations of the creation and implementation of budgetary policy in Ukraine, evaluation of its impact on the financial security in time of challenges. The study uses methods of comparative analysis, grouping in the process of evaluating the current state of budgetary policy indicators, methods of normalization and standardization of data, modelling, and graphical analysis of data for normalizing the financial security indicators and determining the dynamics of financial security components. The materials and reports containing statistical data from the Ministry of Finance of Ukraine and the State Statistics Service of Ukraine served as the basis of the study. It was determined that the components of the state's financial security in the face of martial law and pandemic do not take into account the impact of budgetary policy. Therefore, in the course of comprehensive integrated assessment of the financial security of the state, additional indicators were proposed.

The paper by **Tetyana Chala, Oleksiy Korepanov, Juliia Lazebnyk, Daryna Chernenko,** and **Georgii Korepanov** deals with *Statistical modelling and forecasting of wheat and meslin export from Ukraine using the singular spectra analysis.* The article presents the problems related to the functioning of the worldwide market of wheat and meslin. The structure of wheat export by Ukrainian regions is analysed in comparison with the total export. The localisation coefficient is applied to measure the regional unevenness of the distribution of wheat export volumes and the total export by regions of the country. The modelling and forecasting of the volumes and prices of export of wheat and meslin from Ukraine are based on Singular Spectrum Analysis. The study particularly focuses on the individual components of time series, such as trend, annual, semi-annual, four-month, three-month seasonal components. The reliability of the forecast is confirmed by the calculation of the MAPE forecast error and Henry Theil's inequality coefficient. The article proposes an algorithm for calculating the relative indicators of the structure for the individual components of the reconstructed time series, identified through the singular spectral analysis.

The next article prepared by **Halyna Holubova** *A comparative analysis of the principal component method and parallel analysis in working with official statistical data describes* the basic conceptual approaches to the definition of principle components. Moreover, the methodological principles of selecting the main components are presented. A comparative analysis of the eigenvalues was performed by means of two methods: the Kaiser criterion and the parallel Horn analysis on the example of several data sets. The study shows that the method of parallel analysis produces more valid results with actual data sets. The author believes that the main

advantage of Parallel analysis is its ability to model the process of selecting the required number of main components by determining the point at which they cannot be distinguished from those generated by simulated noise. The Parallel analysis method uses multiple data simulations to overcome the problem of random errors. This method assumes that the components of real data must have greater eigenvalues than the parallel components derived from simulated data which have the same sample size and design, variance and number of variables.

Oleg Krekhivskyi and **Olena Salikhova** in their manuscript consider *A new industrial strategy for Europe – new indicators of the results of its implementation*, The paper discusses the experiences resulting from EU's adoption and implementation of a wide variety of policy measures in response to the COVID-19 crisis. These measures included stimulating the relocation and expansion of manufacturing to reduce vulnerability, depending on imports, ensuring the stability and development of industrial production. The study proposes and tests a new approach to assessing the consequences of relocation policies aimed at developing the local production potential, increasing the value added by activity, and expanding the share of local value added in industry exports. The manuscript focuses on the formation of statistical analysis tools for assessing the changes of the specialisation and identifying the country's comparative advantages. The authors propose new indicators: RSP – coefficient of Revealed Specialisation of Production, CAVA – coefficient of Comparative Advantage in Value Added by Activity and EVA – coefficient of Comparative Advantages in the Domestic Value Added Exports.

The paper entitled *Assessing the maturity of the current global system for combating financial and cyber fraud* by **Olha Kuzmenko, Hanna Yarovenko,** and **Larysa Perkhun** assesses the maturity of systems for counteracting financial and cyber fraud with the view of their future integration at global-level. The calculations made by the authors were based on indicators for 76 countries, which characterized each country's level of cybersecurity and its ability to combat financial fraud in 2018. The authors conducted a bifurcation analysis of the maturity of current global system for combating financial and cyber fraud and produced its phase portraits. It was found to be mature („Government Efficiency Index – Ease of Doing Business" and „Ease of Doing Business – Crime Index") and insufficient mature („Government Efficiency Index – Crime Index"), with the components' imbalance indicating high system's sensitivity to react on changes. The constructed 'Equilibrium States' phase portraits showed non-equilibrium phase portraits of the 'saddle' type. The obtained results made it possible to identify determinants of a global integrated system's instability to combat financial and cyber fraud.

Ella Libanova and **Oleksii Pozniak** in their paper *War-driven wave of Ukrainian emigration to Europe: an attempt to evaluate the scale and consequences (the view of Ukrainian researchers)* evaluate the scale and consequences of the emigration of

Ukrainians triggered by the military aggression of the Russian Federation. The paper also attempts to determine the composition of the refugees. According to the estimation of the Ptukha Institute for Demography and Social Studies of the National Academy of Sciences of Ukraine based on the data from the State Border Guard Service, the number of 'refugees from the war in Ukraine' reached 3 million as of the end of June 2022. The potential amount of irreversible migration losses, depending on the military and economic factors, ranges from 600–700 thousand to 5–5.5 million people. Considering the fact that approximately 3 million Ukrainians had already been staying (working) abroad before 2022, the war is likely to result in a demographic catastrophe for Ukraine, whose demographic potential has been utterly exhausted.

The article prepared by **Maryna Puhachova** and **Oleksandr Gladun** entitled ***Using electronic registries to study the COVID-19 pandemic and its consequences*** analyses systems of electronic information resources (registers and databases) in the field of the healthcare in different countries. These systems provide information to support the treatment of patients, and also also accumulate large amounts of statistics, thus enabling their qualitative operational analysis. The authors summarise information on the use of electronic registers and databases to create an information base for the study of the COVID-19 pandemic and its consequences in different countries, and formulate proposals for the improvement of electronic health systems in Ukraine. On the basis they propose a list of electronic registers that can significantly improve the analysis of both, the course and the consequences of the coronavirus disease.

Deepika Rajoriya and **Diwakar Shukla's** manuscript ***Under military war weapon support the economic bond level estimation using generalized Petersen graph with imputation*** presents a sample based estimation methodology for estimating the meaneconomic bond value among countries involved in the military support or business. The problem is derived from current Russia-Ukraine war situation. A node sampling procedure is proposed whosebias, mean-squared error and other properties are derived. Results are supported with empirical studies. Findings are compared with particular cases and confidence intervals are usedas a basic tool of comparison. Pattern imputation is used together with a new proposal of CI-Imputation method who has been proved useful for filling the missing value, specially whensecret economic support data from involved countries found missing.

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