Polskie Towarzystwo Statystyczne
Oddział we Wrocławiu

ŚLĄSKI PRZEGLĄD STATYSTYCZNY

Silesian Statistical Review

Nr 14 (20)

Wydawnictwo Uniwersytetu Ekonomicznego we Wrocławiu
Wrocław 2016

RECENZENCI WSPÓŁPRACUJĄCY Z CZASOPISMEM

Milan Bašta, Tadeusz Borys, Mariusz Czekała, Jakub Fisher, Ewa Frątczak, Stanislawa Hronová, Helena Jasiulewicz, Alina Jędrzejczak, Wojciech Kordecki, Ryszard Krysze-Jasiński, Dorota Kuchta, Jitka Langhamrová, Tomáš Loster, Ivana Malá, Krystyna Melich, Zofia Mielecka-Kubień, Witold Miszczak, Juliusz Siedlecki, Jaroslav Sixta, Włodzimierz Szkutnik, Jerzy Wawrzynek, Witold Więsław, Jiří Witzany, Emília Zimková

RADA NAUKOWA

Walenty Ostasiewicz (Uniwersytet Ekonomiczny we Wrocławiu, Polska)
Tadeusz Bednarski (Uniwersytet Wrocławski, Polska)
Ivan Belko (Belarusian State University, Belarus)
Luisa Canal (University of Trento, Italy)
Karlheinz Fleischer (Philipps-Universität Marburg, Germany)
Francesca Greselin (University of Milano-Bicocca, Italy)
Stanisław Heilpern (Uniwersytet Ekonomiczny we Wrocławiu, Polska)
Stanislava Hronová (VSE Prague, the Czech Republic)
Salvatore Ingrassia (University of Catania, Italy)
Jerzy Śleszyński (Uniwersytet Warszawski, Polska)
Halina Woźniak (Urząd Statystyczny we Wrocławiu, Polska)
Michele Zenga (University of Milano-Bicocca, Italy)
Emília Zimková (Matej Bel University Banská Bystrica, Slovakia)
Ricardas Zitikis (University of Western Ontario, Canada)

KOMITET REDAKCYJNY

Zofia Rusnak (Uniwersytet Ekonomiczny we Wrocławiu, Polska) – redaktor naczelny
Katarzyna Ostasiewicz (Uniwersytet Ekonomiczny we Wrocławiu, Polska)
Angiola Pollastri (University of Milano-Bicocca, Italy)
Grażyna Trzpiot (Uniwersytet Ekonomiczny w Katowicach, Polska)
Reinhard Viertl (Vienna University of Technology, Austria)

Edyta Mazurek – sekretarz
edyta.mazurek@ue.wroc.pl
+48 71 71 36 80 325

Spis treści

Aims and scope **5**

Oscar Sheynin: On the history of university statistics **7**
Marian Matłoka: *h*-Preinvex fuzzy processes **27**
Joanna Dębicka, Beata Zmyślona: Construction of multi-state life tables for critical illness insurance – influence of age and sex on the incidence of health inequalities **41**
Wiktor Ejsmont: Podstawowe pojęcia wolnej probabilistyki **65**
Edyta Mazurek: Podatek dochodowy w kontekście rodziny **75**
Katarzyna Ostasiewicz: Kto co konsumuje i czy wystarczająco dużo: gospodarka i bieda, czyli Nagroda imienia Nobla z dziedziny ekonomii dla Angusa Deatona (2015) **89**
Agnieszka Thier: Analiza sposobów pomiaru oraz skutków deficytu zasobów wodnych na świecie **111**
Damian Gąska: Wykorzystanie sieci bayesowskich do prognozowania bankructwa firm **131**
Walenty Ostasiewicz: Metabometria **145**
Monika Hadaś-Dyduch: Iluzja, marzenia a rzeczywistość – bezpośrednia i niebezpośrednia inwestycja w indeksy giełdowe na przykładzie produktów inwestycyjnych **185**
Agnieszka Marciniuk: 23. Scientific Statistical Seminar "Wrocław-Marburg" **203**
23. Scientific Statistical Seminar "Wrocław-Marburg", Pottenstein-Kirchenbirkig, 28.09.2015 – 1.10.2015. Extended Abstracts **207**
Beata Zmyślona: Application of Mathematics and Statistics in Economics. The 18th International Scientific Conference **229**
Tadeusz Gerstenkorn: Włodzimierz Krysicki matematyk-stochastyk (1905–2001) **233**
Walenty Ostasiewicz: Profesor Ryszard Antoniewicz (19.08.1939 – 20.02.2015) **243**
Walenty Ostasiewicz: Nobel, Non Nobel, Ig Nobel, and Alternative Nobel Prizes **251**
Agata Girul: Ważniejsze dane społeczno-gospodarcze o województwach **255**

ŚLĄSKI
PRZEGLĄD
STATYSTYCZNY

Nr 14 (20)

Summaries

Oscar Sheynin: On the history of university statistics **7**
Marian Matłoka: h-Preinvex fuzzy processes **27**
Joanna Dębicka, Beata Zmyślona: Construction of multi-state life tables for critical illness insurance – influence of age and sex on the incidence of health inequalities **41**
Wiktor Ejsmont: Basic concepts of free probability theory **73**
Edyta Mazurek: The income tax in the context of the family **87**
Katarzyna Ostasiewicz: Who consumes what and is it enough: economy and poverty. Prize in Economic Sciences in Memory of Alfred Nobel for Angus Deaton (2015) **110**
Agnieszka Thier: Analysis of ways of measurement and the consequences of water shortage in the world **128**
Damian Gąska: Bankruptcy prediction with Bayesian networks **143**
Walenty Ostasiewicz: Metabometrics **182**
Monika Hadaś-Dyduch: The illusion, dreams and reality – direct and indirect investment in stock indices on the example of investment products **201**

Aims and scope

Aims and scope of this journal were determined already in the period of the historical changes that took place in 1989 in the Europe, which had a great meaning for Poland, especially for the subsequent political and economic transformations. The introduction of the democratic system, and the transition from the state-controlled economy to the free market one were the driving forces behind the new Polish economy.

In the early 1990s, Poland made great progress towards achieving a fully democratic government and a market economy. In November 1990, Lech Wałęsa was elected President for a 5-year term. In 1991 were held the first free parliamentary elections. In the same year, 1991, the first issue of the journal was published under the title *Statistical Review of Lower and Opole Silesia*. In the foreword of that first issue it was stated what follows. "The changes in the socio-economic life of Lower Silesia and Opole region caused the Council of Wrocław Branch of Polish Statistical Society to publish Statistical Review of Lower and Opole Silesia, starting from the year 1991. This idea could come to life thanks to the generous help of directors of Voivodeship Statistical Offices in Jelenia Góra, Legnica, Wałbrzych and Wrocław, with a special involvement of the director of Statistical Office in Wrocław". The initial goal of the founders of the journal was to dedicate the journal to "ecological problems, demographic issues as well as social and economic well-being".

Starting in the year 2002 the journal has been published with a new layout and under a new title: *Silesian Statistical Review*. Together with *Statistical Review* (*Przegląd Statystyczny*) and *Statistical News* (*Wiadomości Statystyczne*), *Silesian Statistical Review* is now one of the three major journals in Poland dedicated to general statistical problems. Special attention has been focused on general methodological issues, as well as on the applications of various statistical methods in solving real social and economic problems. Papers concerning all topics of quality of life are published regularly. Historical essays are included on regular basis.

After 25 years of the existence, by entering in the next quarter of the century of its existence with the issue of 2016, the main scope of journal is amplified. This is again caused by changes which took place on the

whole planet. In order to meet the challenge mounted by dramatic consequences of human dominance over the planet the scope of journal has been amplified to include any problems concerning the quality of human life, respecting all other forms of lives and not compromising the possibilities for future generations to live their ways of life.

Starting from the year 2016, *Silesian Statistical Review* is considered as a *Journal of Oikometrics*

The name, derived from Greek words *οικος* and *μετρω*, suggests that the journal focus is upon Nature's house (*oikos*), as a subject matter of a study, and the measurement, as a prevailing methodology of study. The journal is treated as an *interdisciplinary forum on a sustainable livelihood*. Contrary to the inscription on the door of Plato's Academy: *let no one ignorant of geometry enter here*, over the door to *Journal of Oikometrics* there is hanged the signboard with the inscription: *Everyone who cares about, and interested in any issue of sustainable livelihood is welcomed here*.

The Journal welcomes therefore papers from specialists in sustainability science, ecology, ecological economics and any other alternatives to neoclassical economics. It encompasses – but is not limited to – the following topics:

- actuarial methods and their applications,
- social justice, inequality, polarization, and stratification,
- quality of institutional performance,
- social metabolism, its measurement and analysis,
- statistical education,
- sustainable development,
- environmentalism.

As the official journal of the Polish Statistical Society, Branch in Wrocław, it is designed also to attract papers that have direct relation with the activity of the Society, particularly in the field of education, promotion and rising awareness of the statistics role in the civilization development.

Walenty Ostasiewicz

23. SCIENTIFIC STATISTICAL SEMINAR "WROCŁAW-MARBURG"

ŚLĄSKI PRZEGLĄD STATYSTYCZNY
Nr 14(20)

Agnieszka Marciniuk
Wrocław University of Economics – Statistic Department

ISSN 1644-6739
e-ISSN 2449-9765

DOI: 10.15611/sps.2016.14.11

This year's 23. Scientific Statistical Seminar "Wrocław-Marburg" was held between 28.09 and 1.10.2015 in the village of Pottenstein near Nuremberg. Professor Zdzisław Hellwig ushered in working with statistics from the Phillips-University Marburg in Germany in the 1980s. This cooperation was interrupted in 1994, and then revived in 2001. This year, two seminars were held – first in Marburg, and the second in Wrocław. Since 2002, seminars have been held annually, one in Germany, one in Poland. Since 2009 meetings have taken place every two years. The already retired Professor Volker Mammitzsch and Professor Karlheinz Fleischer form the University of Marburg and Professor Josef Steinebach from Cologne University arrange seminars on German side. The organizer of the Polish seminars is Professor Walenty Ostasiewicz. In the year 2013 a seminar was organized by Dr. Zofia Rusnak, professor EU in Wrocław and Dr. Eng. Agnieszka Marciniuk.

This year's seminar was organized by Professor Karlheinz Fleischer. The participants of 23. Scientific Statistical Seminar "Wrocław--Marburg" were: Professors Volker Mammitzsch and Karlheinz Fleischer, Doctors Heiko Grönitz and Karl-Heinz Schild, and Mänz Posselt, M.Sc. from the University of Marburg, and Professor Josef Steinebach from Cologne University. The Department of Statistics of Wrocław University of Economics was represented by Professors Zofia Rusnak, Joanna Dębicka, Stanisław Heilpern, the retired Professors Walenty Ostasiewicz and Jerzy Wawrzynek, Doctors Agnieszka Marciniuk, Edyta Mazurek and Beata Zmyślona. The nine contributions in English were presented in four sessions. Some of the papers were dedicated to insurance issues, the dependence between the insured, dread disease insurance and new insurance products. In this subject the following papers were delivered:

- Joanna Dębicka, Agnieszka Marciniuk, Beata Zmyślona, *Combining marriage reverse annuity contract with dread disease insurances*,
- Stanisław Heilpern, *Modelling of depending structure – copulas and multivariable measures*,

- Agnieszka Marciniuk, *Stochastic cash flows of marriage insurance with dependence between insured*,
- Beata Zmyślona, *Modelling of extra mortality due to critical illness*.

Other lectures concerned statistical and economic issues, i.e.:

- Heiko Grönitz, *Properties of merged data from independent input samples*,
- Edyta Mazurek, *The fairness of the Polish income tax system with respect to families with children*,
- Mänz Posselt, *Volatility spillover from wind power to electricity price*,
- Karl-Heinz Schild, *Symmetric Markov chains maximize exit time under ex post conditioning*,
- Josef Steinebach, *On the monitoring of CAPM portfolio betas.*

In the free time from the scientific meeting participants of the seminar visited the city of Nuremberg, situated on the River Pegnitz and the city of Pottenstein, admiring the beauty of the 1000-year-old castle and visiting Devil's Cave situated near Pottenstein. The next seminar is planned in Poland in 2017.

W dniach 28.09–1.10.2015 r. w miejscowości Pottenstein niedaleko Norymbergi odbyło się 23. Scientific Statistical Seminar "Wrocław-Marburg". Prof. dr hab. Zdzisław Hellwig zapoczątkował w 1980 r. współpracę ze statystykami z Uniwersytetu w Marburgu w Niemczech. Współpraca ta została przerwana w 1994 r., a następnie w 2001 r. reaktywowana. Tego roku odbyły się dwa seminaria – najpierw w Marburgu, a następnie we Wrocławiu. Od 2002 r. seminaria odbywały się corocznie, raz w Niemczech, raz w Polsce, a od 2009 r. odbywają się w cyklach dwuletnich. Ze strony niemieckiej seminaria organizują: emerytowany już prof. dr Volker Mammitzsch i prof. dr Karlheinz Fleischer z Uniwersytetu w Marburgu oraz prof. dr Josef Steinebach z Uniwersytetu w Kolonii. Organizatorem polskich seminariów jest prof. dr hab. Walenty Ostasiewicz. W 2013 r. seminarium organizowały: dr hab. Zofia Rusnak, prof. UE we Wrocławiu, i dr inż. Agnieszka Marciniuk. Tegoroczne seminarium organizowane było przez stronę niemiecką.

W 23. Scientific Statistical Seminar "Wrocław-Marburg" uczestniczyli: prof. dr Volker Mammitzsch, prof. dr Karlheinz Fleischer, dr Heiko Grönitz i dr Karl-Heinz Schild oraz M.Sc. Mänz Posselt z Uniwer-

sytetu w Marburgu oraz prof. dr Josef Steinebach z Uniwersytetu w Kolonii. Z Katedry Statystyki Uniwersytetu Ekonomicznego we Wrocławiu uczestniczyli: dr hab. Zofia Rusnak, prof. UE we Wrocławiu, dr hab. Joanna Dębicka, prof. UE we Wrocławiu, prof. dr hab. Stanisław Heilpern, emerytowani profesorowie Walenty Ostasiewicz i Jerzy Wawrzynek, dr inż. Agnieszka Marciniuk, dr inż. Edyta Mazurek oraz dr Beata Zmyślona. 9 referatów w języku angielskim zostało wygłoszonych podczas 4 sesji. Część referatów poświęcona była zagadnieniom ubezpieczeniowym, zależnościom między ubezpieczonymi, ubezpieczeniom od ciężkich chorób i nowym produktom ubezpieczeniowym. W tej tematyce wygłoszone zostały następujące referaty:

- Joanna Dębicka, Agnieszka Marciniuk, Beata Zmyślona, *Combining marriage reverse annuity contract with dread disease insurances*,
- Stanisław Heilpern, *Modelling of depending structure – copulas and multivariable measures*,
- Agnieszka Marciniuk, *Stochastic cash flows of marriage insurance with dependence between insured*,
- Beata Zmyślona, *Modelling of extra mortality due to critical illness*.

Pozostałe wystąpienia dotyczyły zagadnień statystyczno-ekonomicznych, a mianowicie:

- Heiko Grönitz, *Properties of merged data from independent input samples*,
- Edyta Mazurek, *The fairness of the Polish income tax system with respect to families with children*,
- Mänz Posselt, *Volatility spillover from wind power to electricity price*,
- Karl-Heinz Schild, *Symmetric Markov chains maximize exit time under ex post conditioning*,
- Josef Steinebach, *On the monitoring of CAPM portfolio betas*.

W czasie wolnym od obrad uczestnicy seminarium zwiedzili Norymbergę, leżącą nad rzeką Pegnitz, oraz miejscowość Pottenstein, podziwiając piękno 1000-letniego zamku oraz zwiedzając Diabelską Jaskinię leżącą niedaleko Pottenstein.

Kolejne seminarium zaplanowane jest w Polsce na rok 2017.